



Subject: SECD2613 System Analysis and Design

Task: Project Phase 3

Project Title: Online Food Delivery System Enhancement

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Student name:

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1.0 Overview of the Project

The Online Food Delivery System is a web and mobile-based platform that enables customers to place food orders from various restaurants and get them delivered through assigned riders. The system manages user registration, order placement, menu management, rider assignment, payment processing, and administrative reporting. The current system is digital but lacks advanced automation, personalization, and seamless user experience. This Phase 3 aims to enhance the existing digital system with improved automation, smarter features, and better user interfaces.

2.0 Problem Statement

The current digital system allows basic order placement and delivery, but it has several limitations:

- Manual rider assignment can delay deliveries
- No real-time recommendations or personalized user experience
- Poor reporting tools for admin users
- Restaurant interactions are not optimized for mobile
- Lack of integrated communication between parties (customer, rider, restaurant)

3.0 Proposed Solutions

- Introduce automated rider assignment using proximity logic
- Implement AI-based food recommendation system
- Develop real-time reporting dashboard for admin
- Mobile-responsive restaurant panel
- Integrated notification system for real-time updates to all users

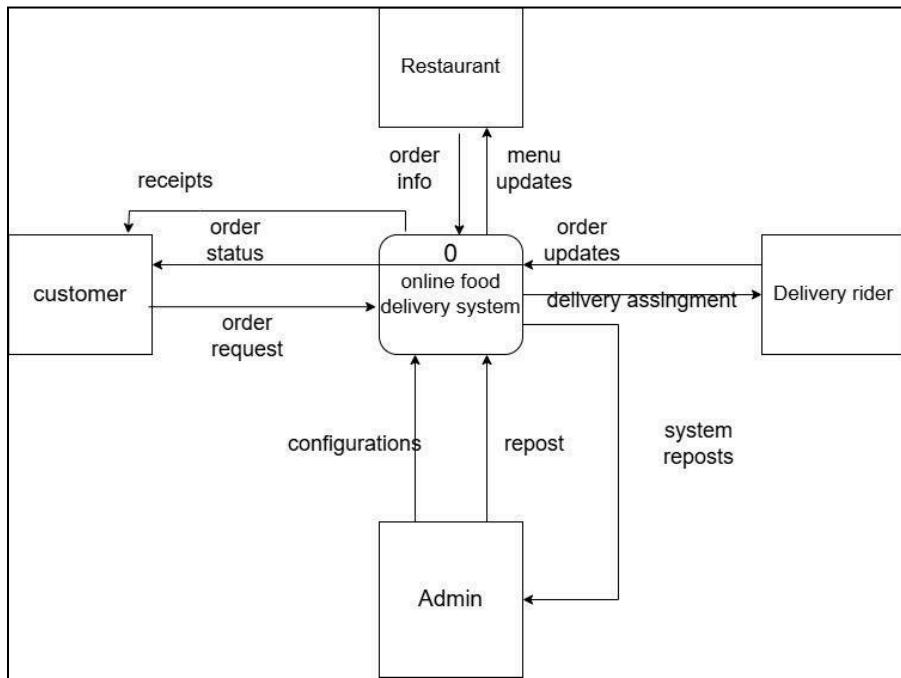
4.0 Current Business Process / Workflow

- Customers register/login to the platform
- Customers browse the menu and place orders
- Orders are accepted by restaurants via the digital interface
- Riders are assigned manually
- Riders deliver food and update status
- Payments are processed through the system
- Admin monitors reports via backend panel

5.0 Logical DFD (AS-IS)

5.1 Logical DFD AS-IS System

5.1.1 Context Diagram:



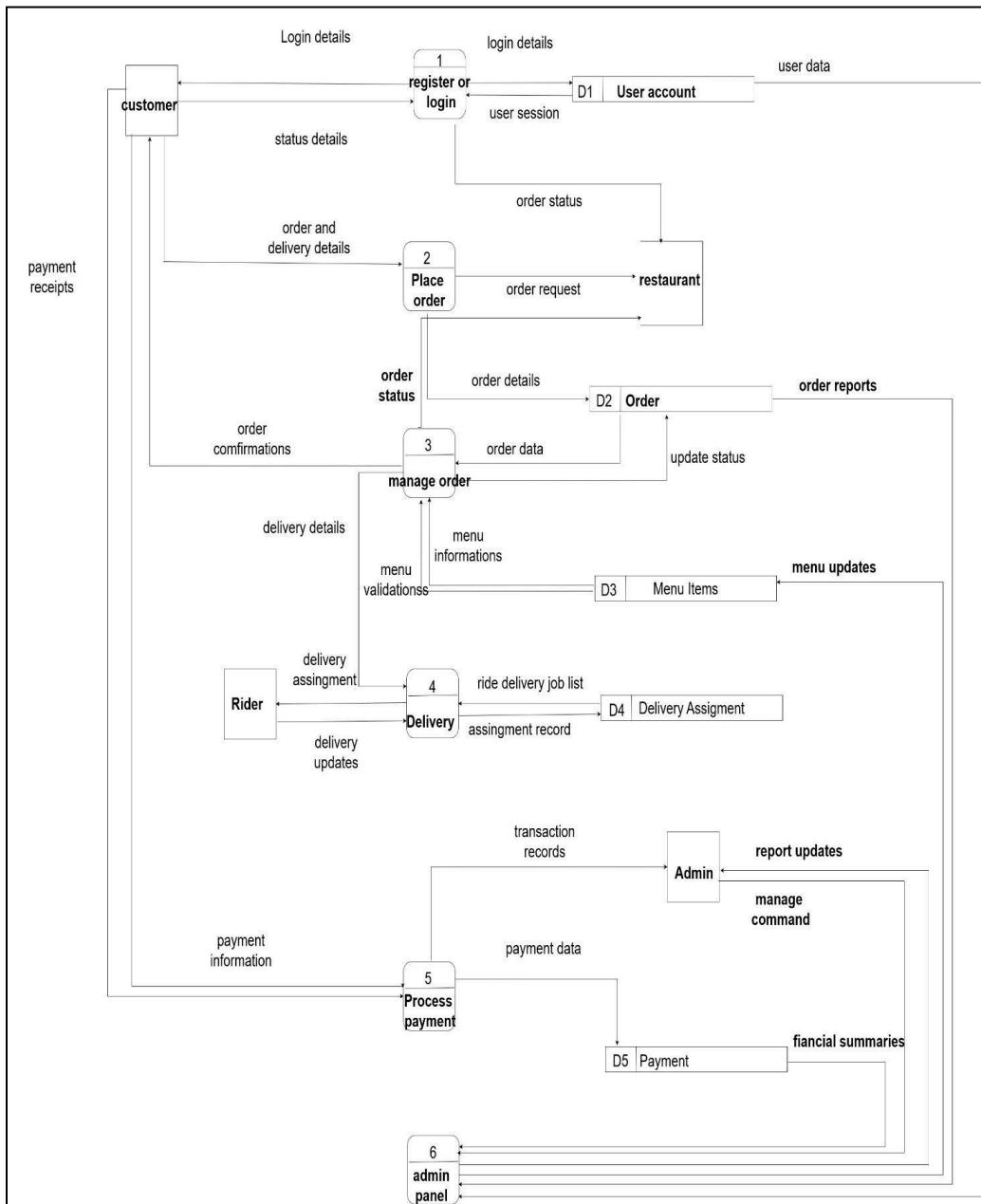
Entities:

- Customer
- Restaurant
- Delivery Rider
- Admin

Process 0: Online Food Delivery System

- Input, Order request (from Customer to Process 0)
- Input, Menu update (from Restaurant to Process 0)
- Input, Delivery update (from Delivery Rider to Process 0)
- Input, Configuration and report request (from Admin to Process 0)
- Output, Order status and receipt (from Process 0 to Customer)
- Output, Order info (from Process 0 to Restaurant)
- Output, Rider assignment (from Process 0 to Delivery Rider)
- Output, System Report (from Process 0 to Admin)

5.1.2 Diagram 0 :



Entities:

- Customer
- Restaurant
- Delivery Rider
- Admin

Data Stores:

- D1 User Accounts
- D2 Orders
- D3 Menu Items
- D4 Delivery Assignments
- D5 Payments

Processes:**1. Register or Login**

- Input, Login details (from Customer to Process 1)
- Output, Authentication status (from Process 1 to Customer)

Data Store Interaction:

- Input, Login details (from Process 1 to D1 User Accounts)
- Output, User session (from D1 User Accounts to Process 1)

2. Place Order

- Input, Order and delivery info (from Customer to Process 2)
- Output, Order request (from Process 2 to Restaurant)

Data Store Interaction:

- Input, Order details (from Process 2 to D2 Orders)
- Output, Order data (from D2 Orders to Process 3)

3. Manage Orders

- Input, Order data (from D2 Orders to Process 3)
- Input, Order status (from Restaurant to Process 3)
- Output, Order details; ready (from Process 3 to Process 4)
- Output, Order Confirmation (from Process 3 to Customer)

Data Store Interaction:

- Input, Menu validation (from D3 Menu Items to Process 3)
- Output, Updated order status (from Process 3 to D2 Orders)

4. Delivery

- Input, Order details; ready (from Process 3 to Process 4)
- Output, Delivery assignment (from Process 4 to Rider)
- Input, Delivery updates (from Rider to Process 4)
- Output, Delivery status; tracking (from Process 4 to Customer)
- Output, Delivery status; tracking (from Process 4 to Customer)

Data Store Interaction:

- Input, Assignment record (from Process 4 to D4 Delivery Assignments)
- Output, Rider job list; status (from D3 to Process 4)

5. Process Payment

- Input, Payment info; data (from Customer to Process 5)
- Output, Receipt (from Process 5 to Customer)
- Output, Transaction record (from Process 5 to Admin)

Data Store Interaction:

- Input, Transaction/ Payment data (from Process 5 to D5 Payments)
- Output, Financial summary (from D4 to Process 6)

6. Admin Panel

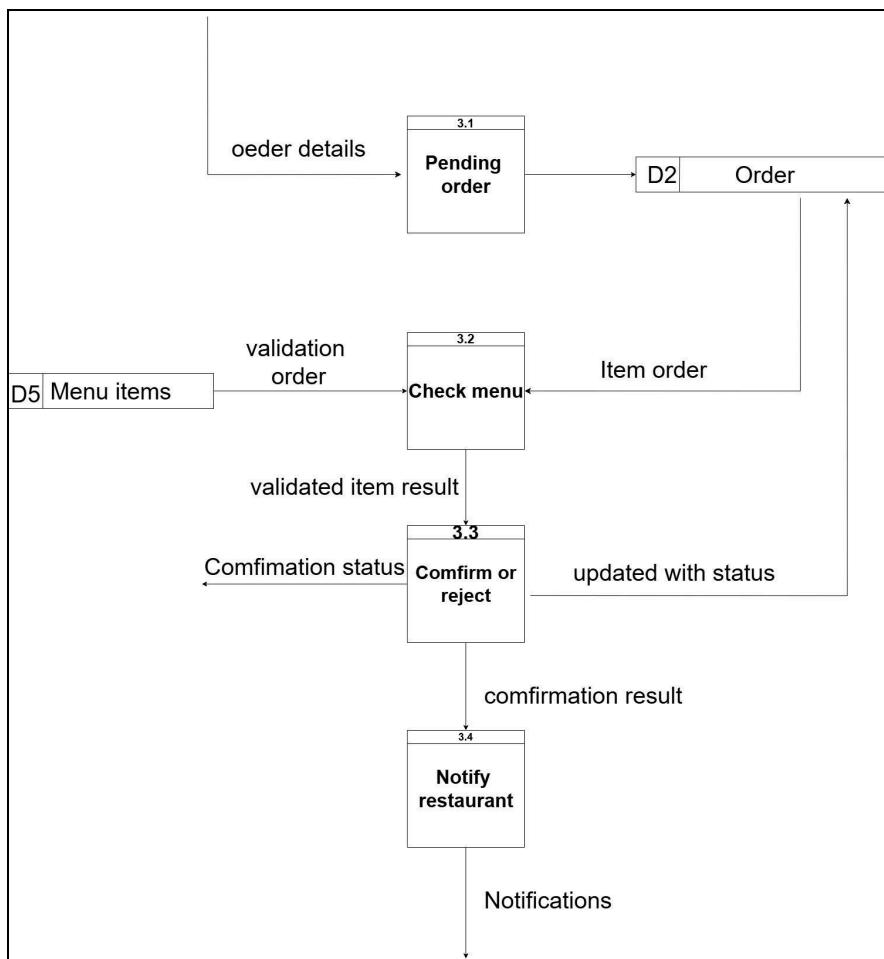
- Input, System commands (from Admin to Process 6)
- Output, Reports/updates (from Process 6 to Admin)

Data Store Interaction:

- Input, View or retrieve user data (from D1 to Process 6)
- Input, Generate order report (from D2 to Process 6)
- Input, Generate financial summary (from D5 to Process 6)
- Output, Update or modify menu items (from Process 6 to D4)

5.1.3 Child Diagram :

Child Diagram 3.0



Entities:

- Customer
- Restaurant

Data Stores:

- D2 Orders
- D3 Menu Items

Processes:

3.1 Receive Order

Input: Order details (from Customer)

Output: Order record (to D2 Orders)

Data Store Direction: Process 3.1 → D2 (save order)

3.2 Check Menu Availability

Input: Menu request (from D2 Orders)

Output: Menu item availability (from D3 Menu Items)

Data Store Direction: D3 → Process 3.2 (read menu data)

3.3 Confirm or Reject Order

Input: Menu validation result (from Process 3.2)

Output: Confirmation status (to Customer), updated order (to D2 Orders)

Data Store Direction: Process 3.3 → D2 (update order status)

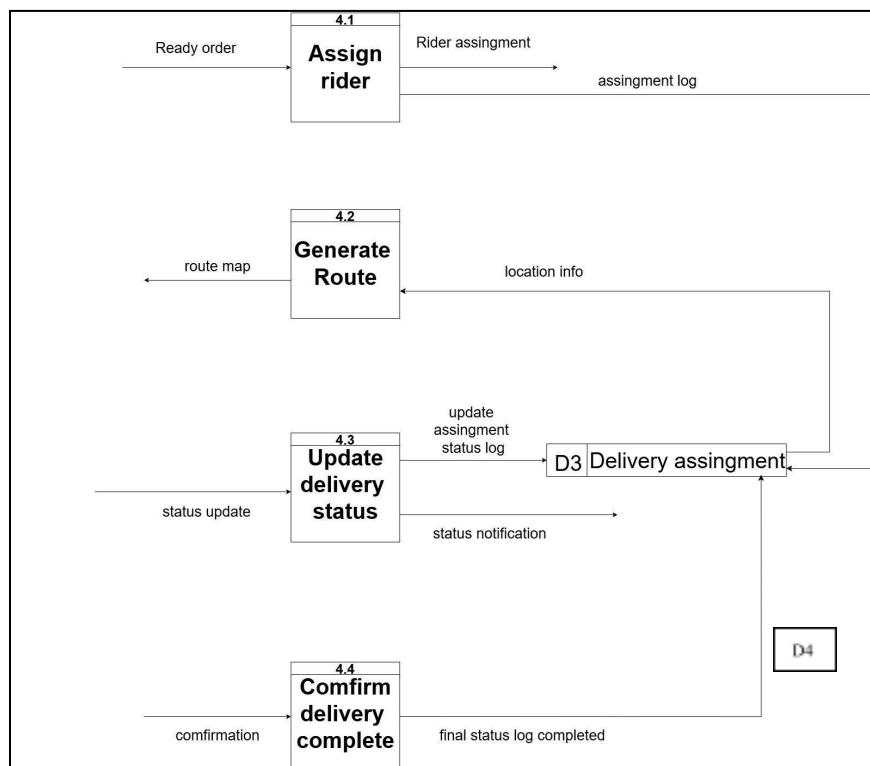
3.4 Notify Restaurant

Input: Confirmation status (from Process 3.3)

Output: Notification (to Restaurant)

Data Store Direction: No interaction

Child Diagram Process 4.0



Entities:

- Delivery Rider
- Customer

Data Store:

- D4 Delivery Assignments

Processes:

4.1 Assign Rider

Input: Ready order (from Process 3.4)

Output: Rider assignment (to Delivery Rider), assignment log (to D3)

Data Store Direction: Process 4.1 → D4 (save assignment)

4.2 Generate Route

Input: Location info (from D4)

Output: Route map (to Delivery Rider)

Data Store Direction: D4 → Process 4.2 (read assignment info)

4.3 Update Delivery Status

Input: Status update (from Delivery Rider)

Output: Status log (to D4), status notification (to Customer)

Data Store Direction: Process 4.3 → D4 (update assignment status)

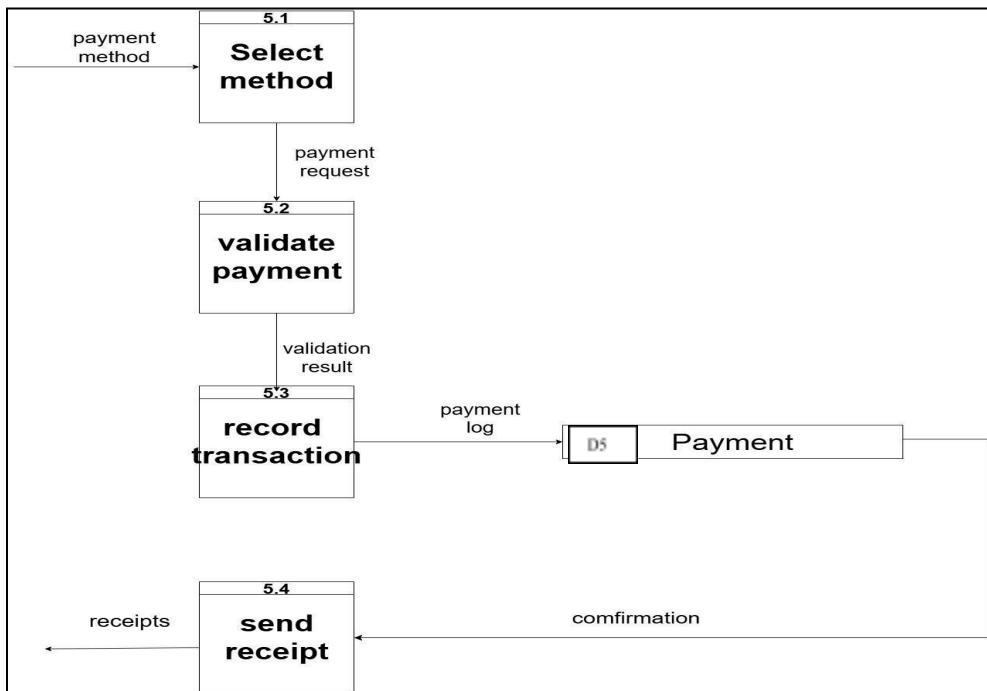
4.4 Confirm Delivery Complete

Input: Confirmation from Rider

Output: Final status log (to D4)

Data Store Direction: Process 4.4 → D4 (mark delivery as completed)

Child Diagram Process 5.0



Entities:

- Customer

Data Store:

- D5 Payments

Processes:

5.1 Select Method

Input: Payment choice (from Customer)

Output: Payment request (to Process 5.2)

Data Store Direction: No interaction

5.2 Validate Payment

Input: Payment request (from 5.1)

Output: Validation result (to 5.3)

Data Store Direction: No interaction

5.3 Record Transaction

Input: Validation result (from 5.2)

Output: Payment log (to D5 Payments)

Data Store Direction: Process 5.3 → D5 (store payment log)

5.4 Send Receipt

Input: Confirmation (from D5 Payments)

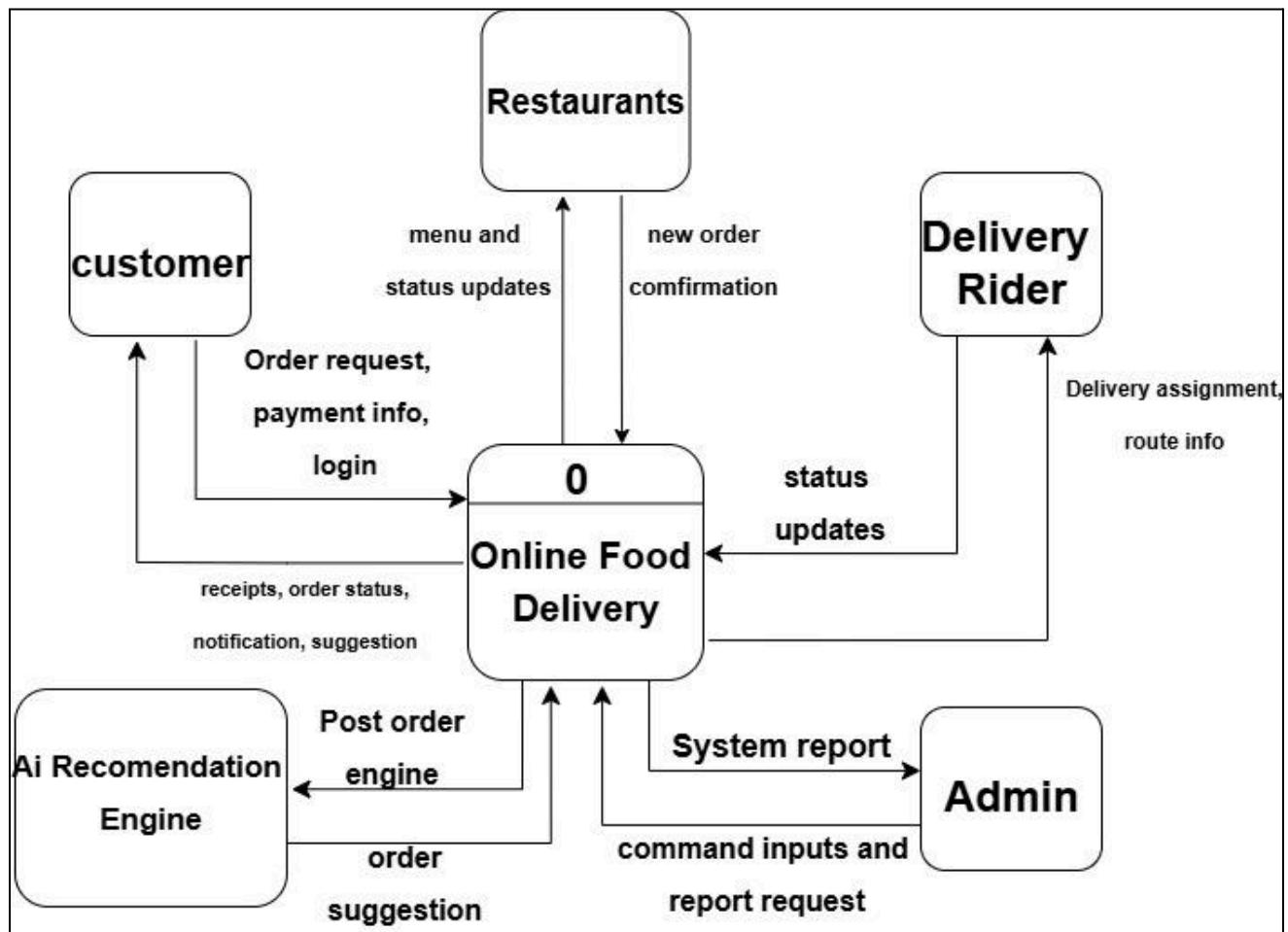
Output: Receipt (to Customer)

Data Store Direction: D5 → Process 5.4 (read for receipt)

6.0 SYSTEM ANALYSIS AND SPECIFICATION

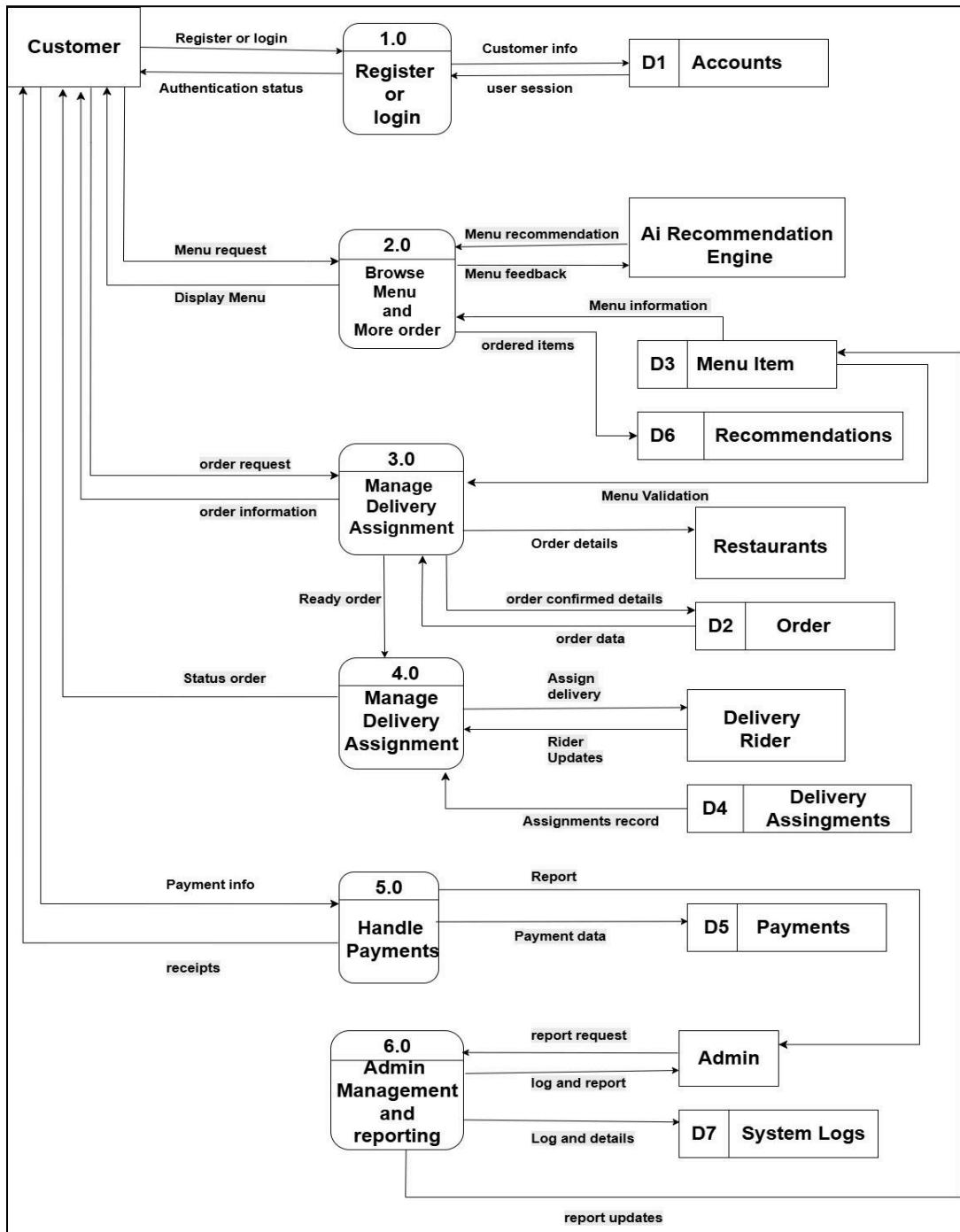
6.1 LOGICAL DFD TO-BE SYSTEM

6.1.1 Context Diagram



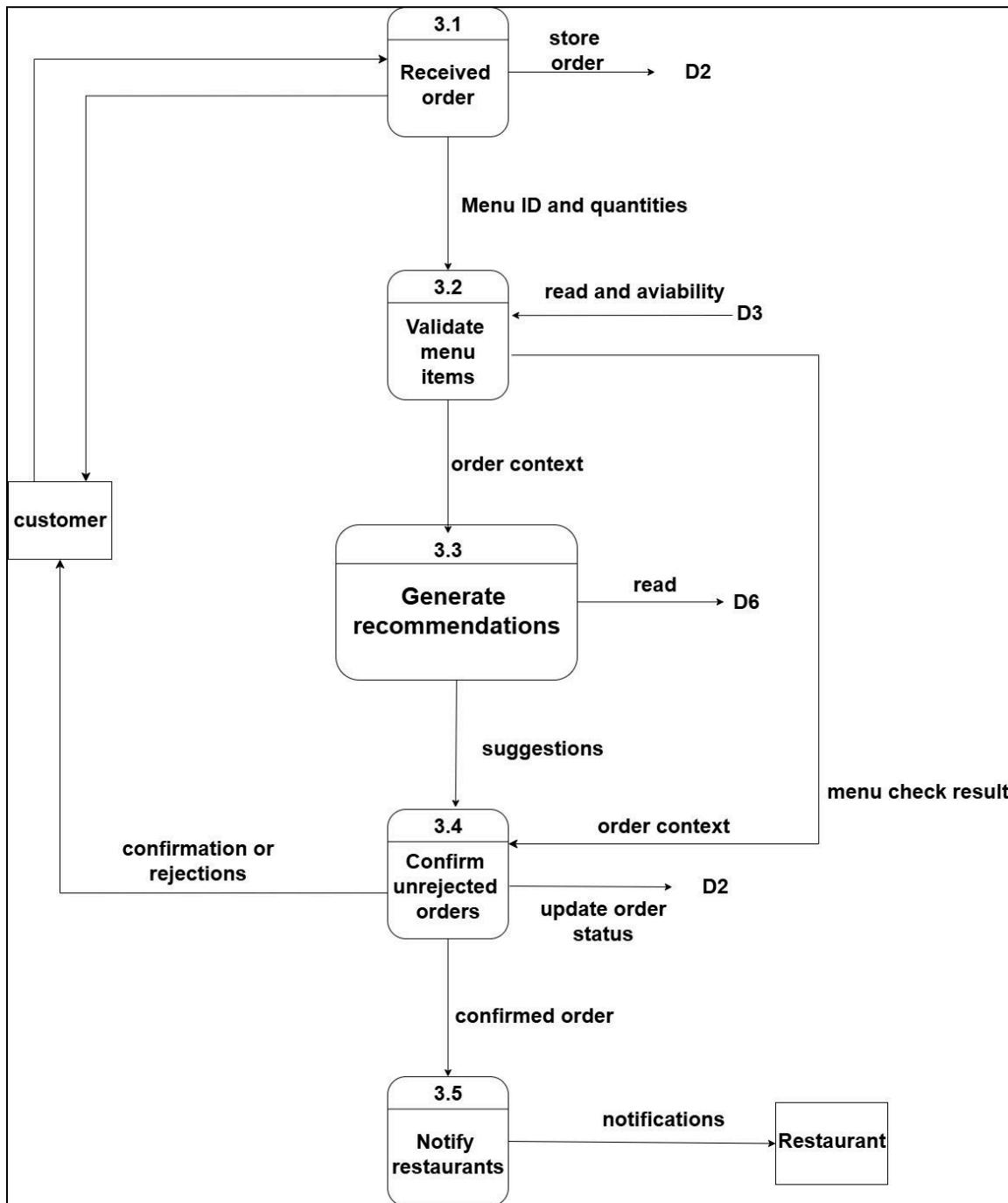
6.1.2 Diagram 0

Diagram 0

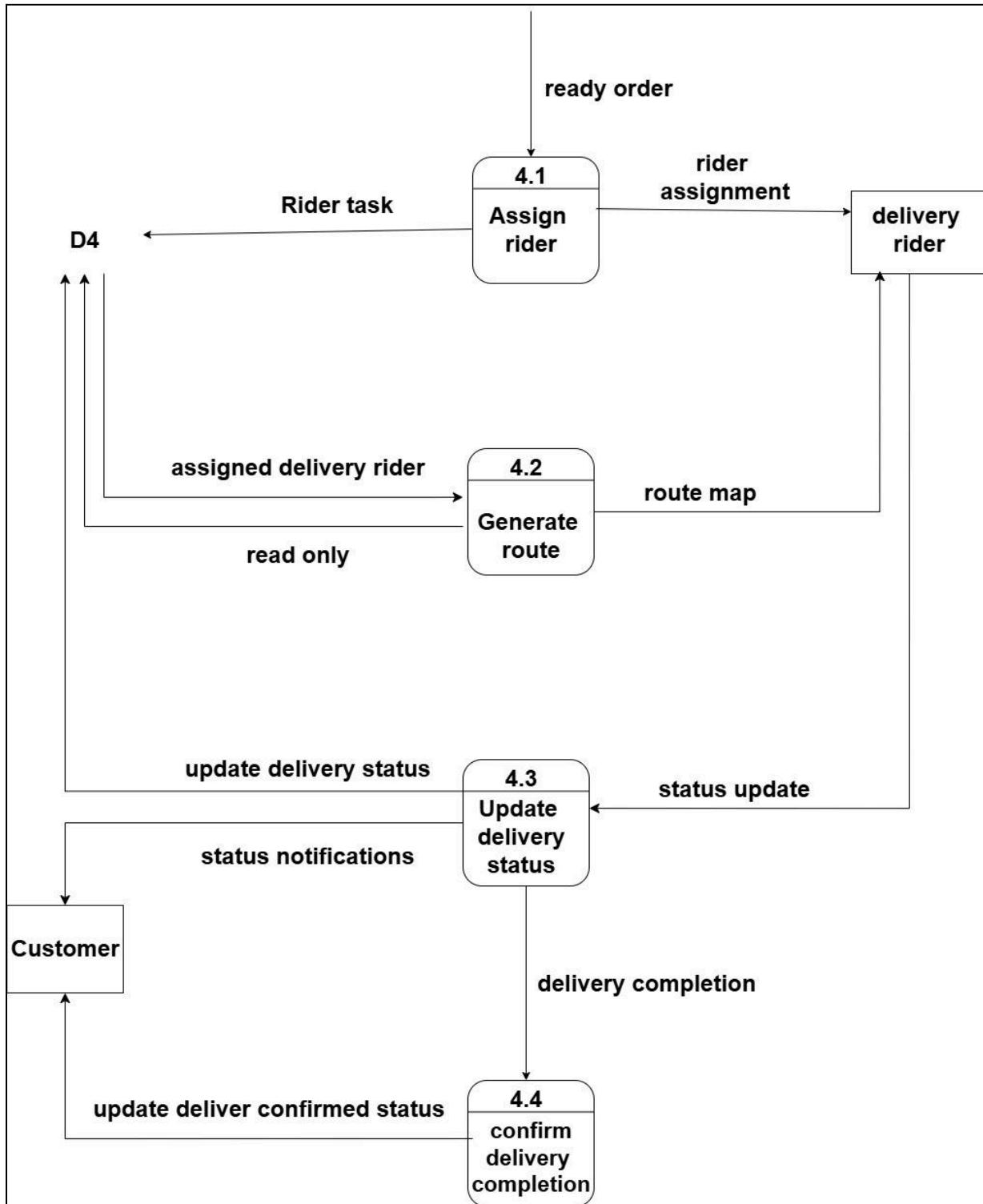


6.1.3 Child Diagram

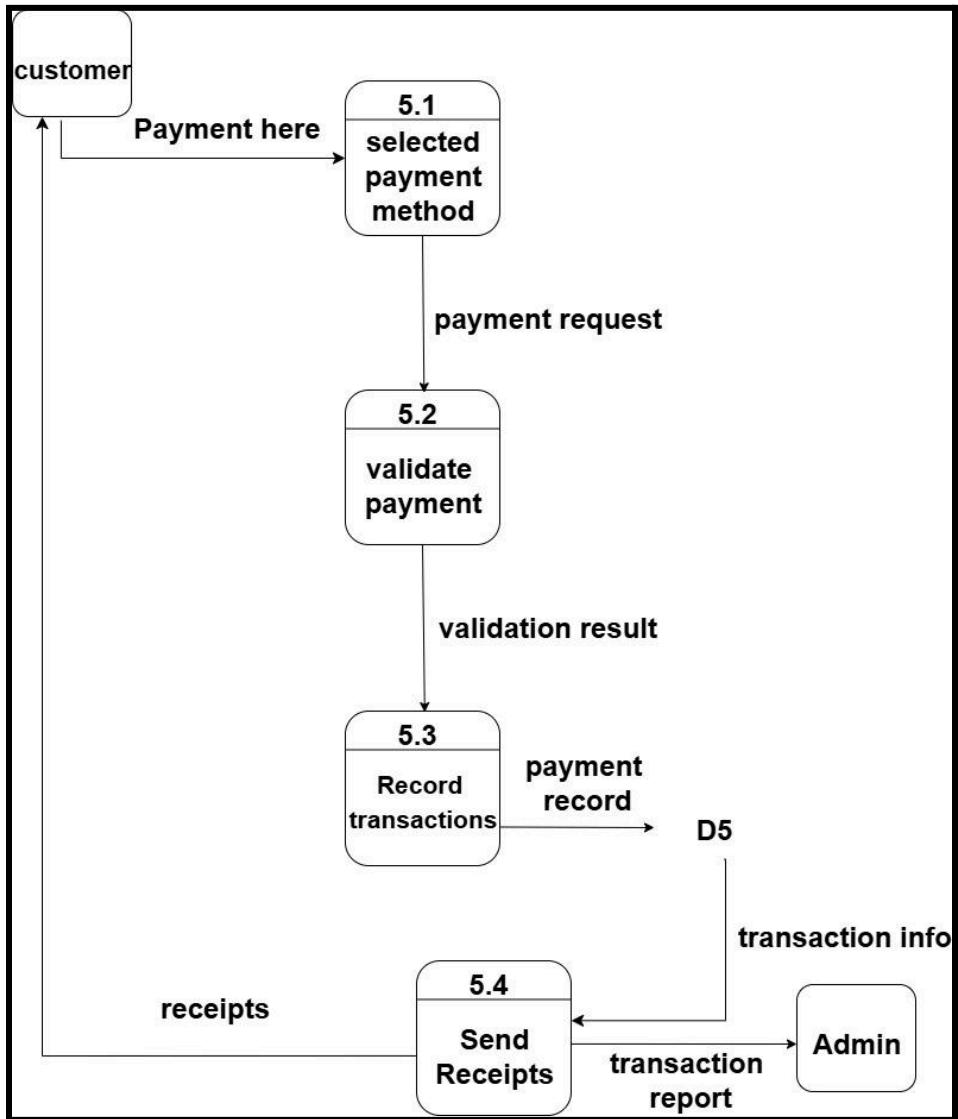
Child Diagram : Process 3.0



Child Diagram : Process 4.0



Child Diagram : Process 5.0



6.2 PROCESS SPECIFICATION

6.2.1 Diagram 0

Process 1 Register or login

Description:

Handles new customer registration and returning customer authentication.

- Input, register login (from customer entity to process 1)
- Output, authentication status (from process 1 to customer entity)
- Output, customer information (from process 1 to D1 Accounts)
- Input, user session (from D1 Accounts to process 1)

Process 2 Browse Menu and Place Order

Description:

Manages menu browsing and initial order placement.

- Input, menu request (from customer to process 2)
- Output, display menu (from process 2 to customer entity)
- Output, menu feedback (from process 2 to AI Recommendation Engine entity)
- Input, menu recommendation (from AI Recommendation Engine entity)
- Output, ordered items (from process 2 to D6 Recommendations)
- Input, menu information (from D3 Menu Items to process 2)

Process 3 Manage order and recommend menu

Description:

Coordinates customer orders with validation and recommendations.

- Input, order request (from customer entity to process 3)
- Output, order information (from process 3 to customer entity)
- Input, menu validation (from D3 Menu items to process 3)
- Output, order details (from process 3 to restaurant entity)
- Output, order confirmed details (from process 3 to D2 Orders)
- Input, order data (from D2 Orders to process 3)
- Output, ready orders (from process 3 to process 4)

Process 4 Manage Delivery Assignment

Description:

Handles rider assignment and delivery tracking.

- Output, assign delivery (from process 4 to delivery rider entity)
- Input, rider updates (from delivery rider entity to process 4)
- Output, assignment record (from process 4 to D4 Delivery assignment)
- Output, status updates (from process 4 to customer entity)

Process 5 Handle Payments

Description:

Manages payment collection and transaction recording.

- Input, payment info (from customer entity to process 5)
- Output, report (from process 5 to admin entity)
- Output, payment data (from process 5 to D5 Payments)
- Output, receipts (from process 5 to customer entity)

Process 6 Admin Management and reporting

Description:

Provides the admin with system monitoring and reporting capabilities.

- Input, report request (from admin entity to process 6)
- Output, logs and report (from process 6 to admin entity)
- Output, logs details (from process 6 to D7 System logs)
- Output, report updates (from process 6 to D3 Menu items)

6.2.2 Child Diagram Process 3.0

Process 3.1 Receive order

- Input, order details (from customer entity to process 3.1)
- Output, order record (from process 3.1 to customer entity)
- Output, store order (from process 3.1 to D2)
- Output, menu IDs and quantities (from process 3.1 to 3.2)

Process 3.2 Validate menu items

- Input, read item availability (from D3 to process 3.2)
- Output, menu check result (from process 3.2 to 3.4)
- Output, order context (from process 3.2 to 3.3)

Process 3.3 Generate recommendations

- Output, read (from process 3.3 to D6)
- Output, suggestions (from process 3.3 to 3.4)

Process 3.4 Confirm or Reject order

- Output, confirmation or rejection (from process 3.4 to customer entity)
- Output, update order status (from process 3.4 to D2)
- Output, confirmed order (from process 3.4 to 3.5)

Process 3.5 Notify Restaurant

- Output, Notification (from process 3.5 to restaurant entity)

6.2.3 Child Diagram 4.0

Process 4.1 Assign Rider

- Input ready order (from restaurant entity to process 4.1)
- Output, rider assignment (from process 4.1 to delivery rider entity)
- Output, rider task (from process 4.1 to D4)

Process 4.2 Generate Route

- Output, route map (from process 4.2 to delivery rider entity)
- Output, read only (from process 4.2 to D4)
- Input, assigned delivery information (from D4 to process 4.2)

Process 4.3 Update Delivery Status

- Input, status update (from delivery rider entity to process 4.3)
- Output, status notification (from process 4.3 to customer)
- Output, update delivery status (from process 4.3 to D4)
- Output, delivery confirmation (from process 4.3 to 4.4)

Process 4.4 Confirm delivery completion

- Output, updated delivery confirmed status (from process 4.4 to customer entity)

6.2.4 Child Diagram Process 5.0

Process 5.1 Select payment method

- Input, payment choice (from customer entity to process 5.1)
- Output, payment request (from process 5.1 to 5.2)

Process 5.2 Validate Payment

- Output, validation result, payment gateway (process 5.2 to 5.3)

Process 5.3 Record Transaction

- Output, payment record (from process 5.3 to D5)

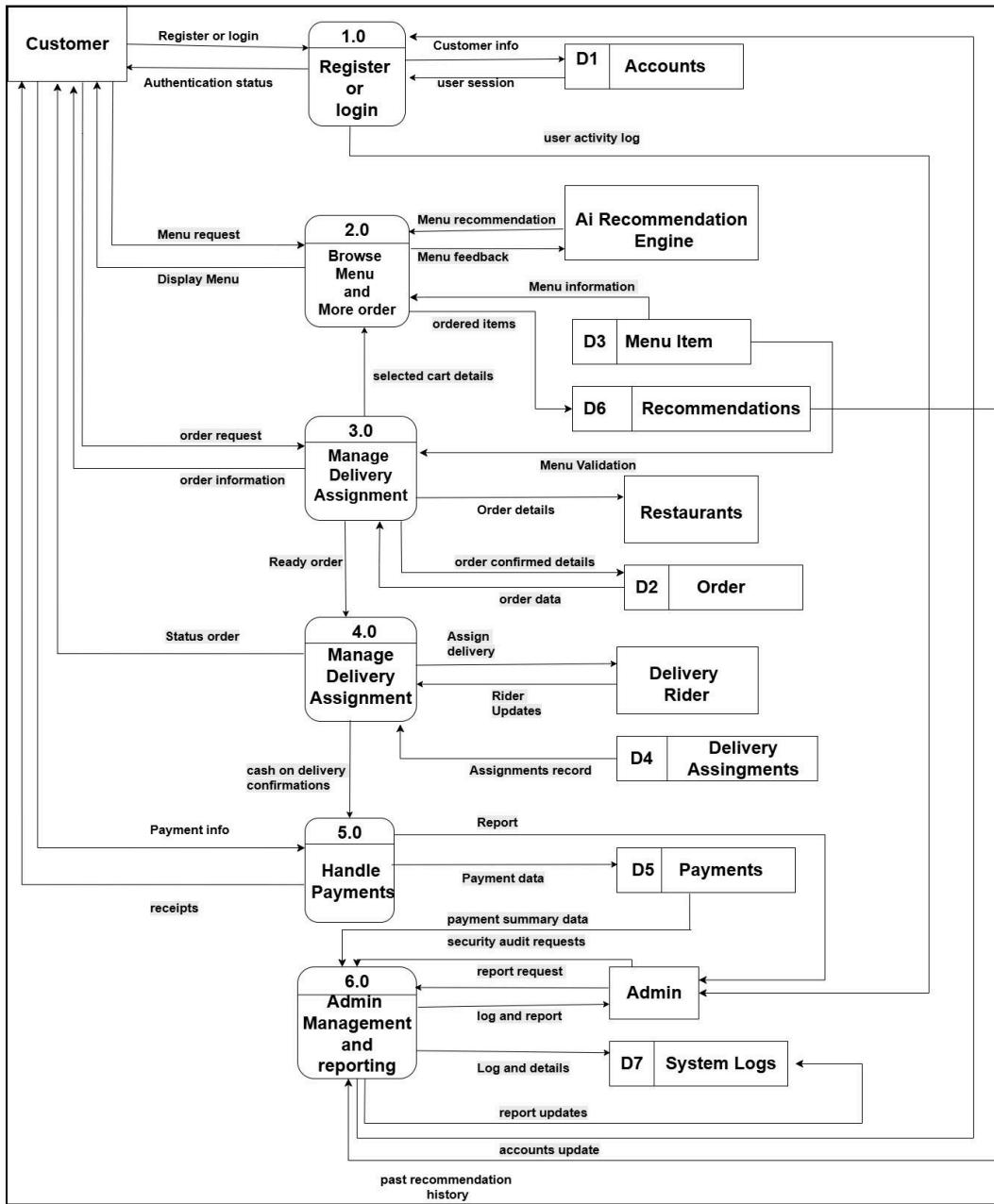
Process 5.4 Send Receipts

- Input, transaction information (from D5 to process 5.4)
- Output, transaction record (from process 5.4 to admin entity)
- Output, receipts (from process 5.4 to customer)

7.0 PHYSICAL SYSTEM DESIGN

7.1 PHYSICAL DFD TO-BE SYSTEM

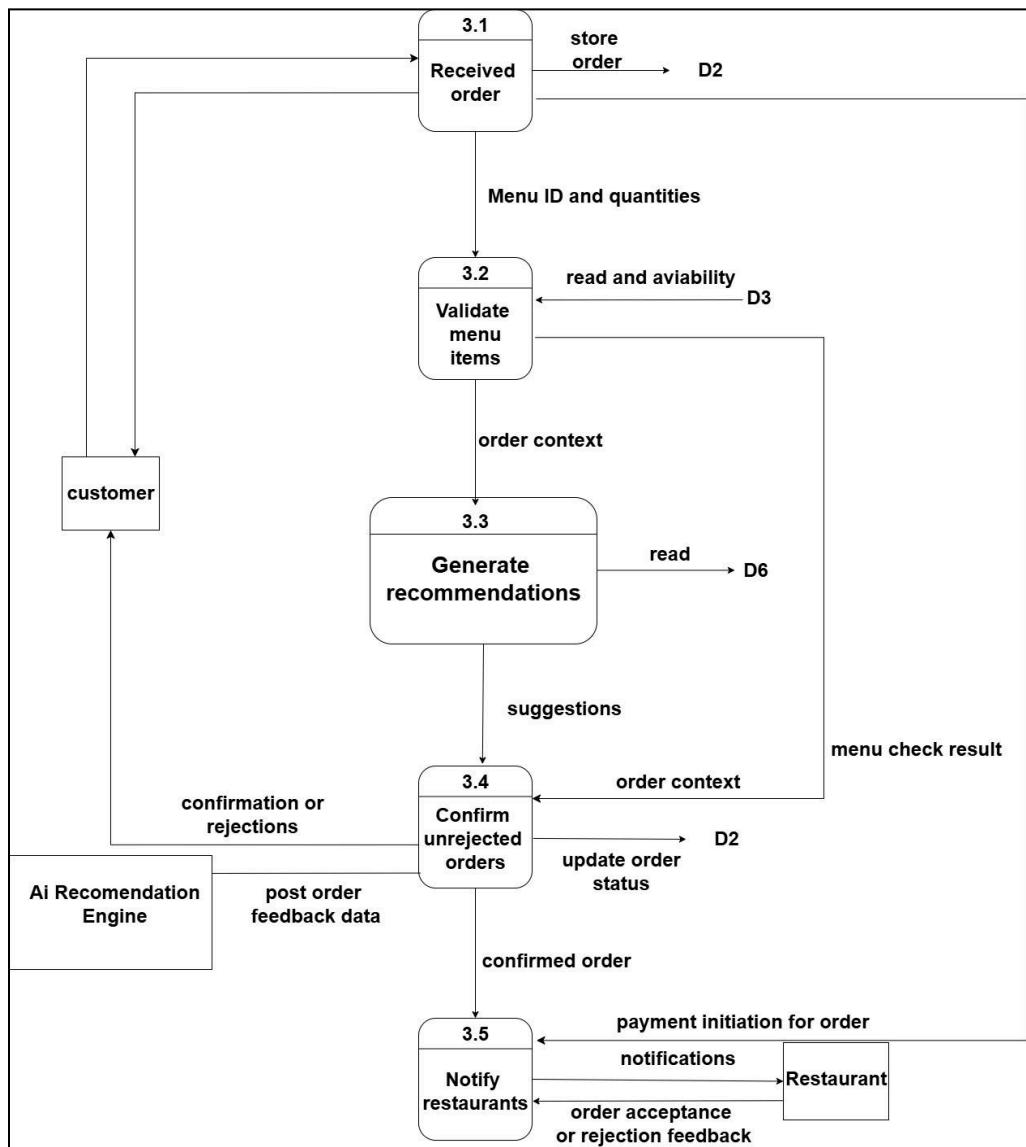
7.1.1 Diagram 0



Process 1 → Admin: user activity logs

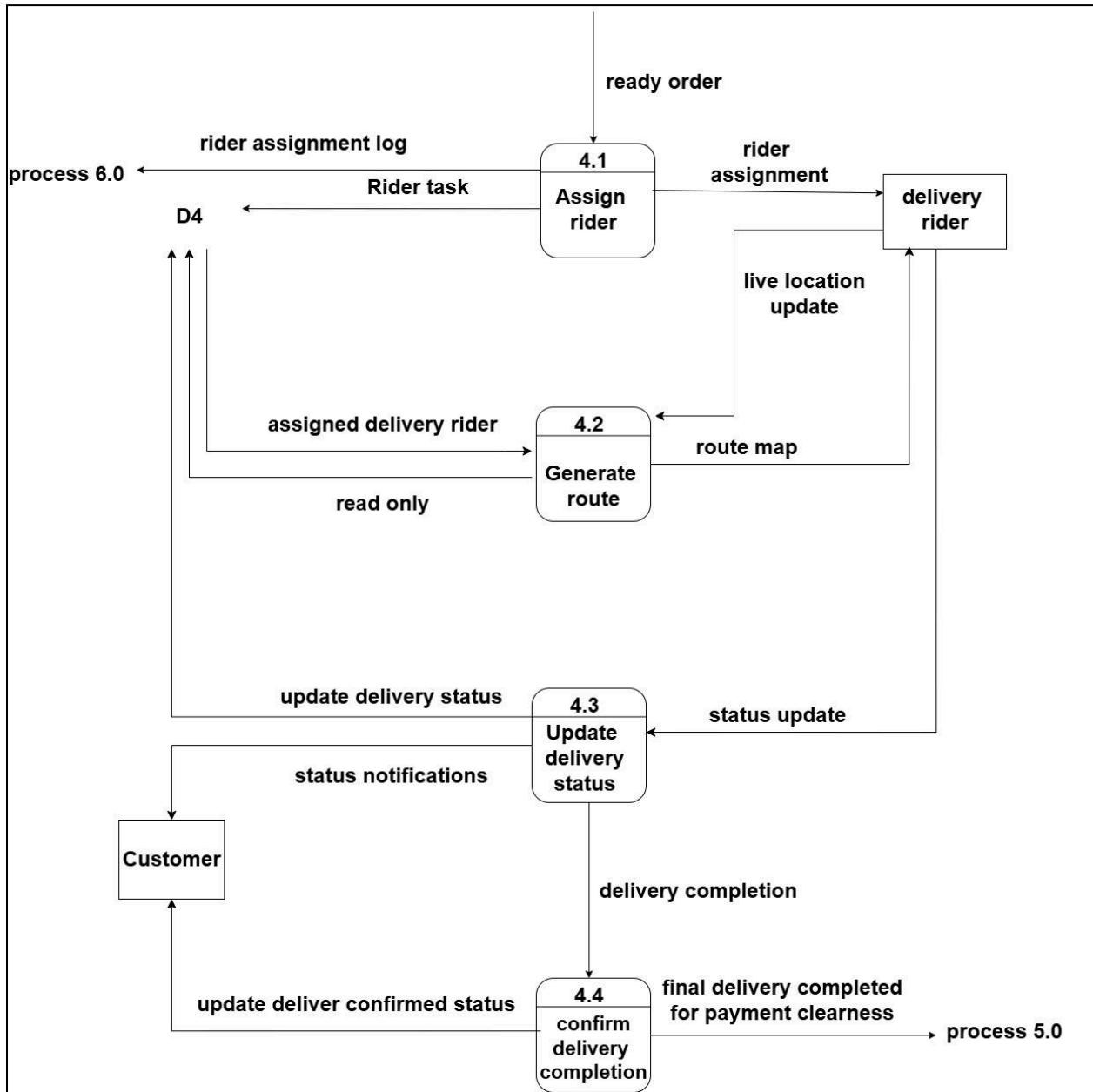
- Admin → Process 6: security audit requests
- Process 6 → Process 1: account status updates (e.g., suspensions)
- Process 2 → Process 3: selected cart details
- D6 Recommendations → Process 2: past recommendation history
- D5 Payments → Process 6: payment summary data
- Process 4 → Process 5: cash on delivery confirmation

7.1.2 Child Diagram Process 3.0



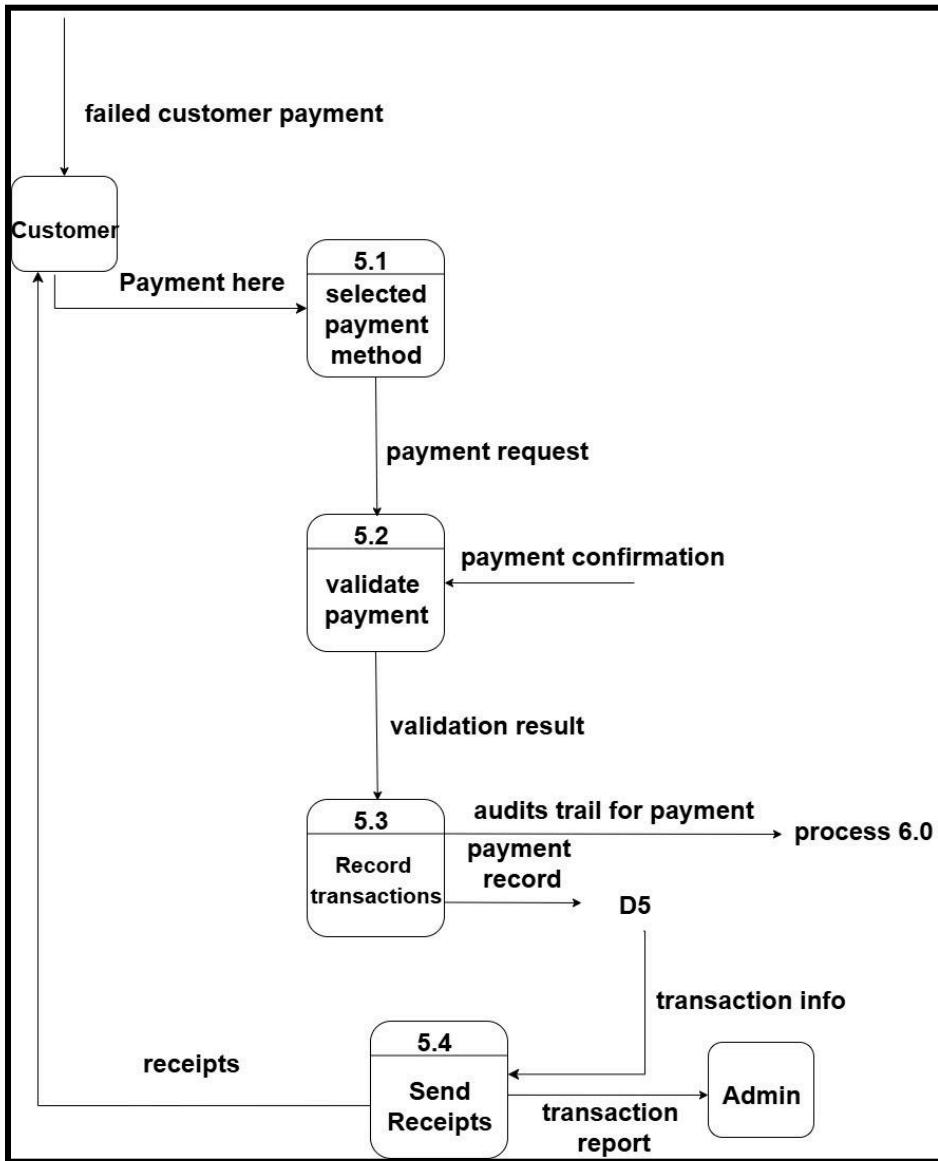
- 3.1 → Process 5: payment initiation for order
- 3.4 → AI Recommendation Engine: post-order feedback data
- Restaurant → 3.5: order acceptance or rejection feedback

7.1.3 Child Diagram Process 4.0



- 4.1 → Process 6: rider assignment logs
- Delivery Rider → 4.2: live location updates
- 4.4 → Process 5: final delivery completed for payment clearance

7.1.4 Child Diagram Process 5.0



7.1.5 Partitioning

Automated Processes

- User registration and login authentication
- Menu browsing and order placement
- Order validation and storage
- Payment processing (validation, recording, receipt generation)
- Rider assignment and routing
- System-generated reports and logs

Manual Processes

- Food preparation by restaurant staff
- Physical food handover to rider
- Rider physically delivering food

7.1.6 CRUD Matrix (map based on your TO-BE DFD)

Processes (columns):

- Register/Login
- Browse Menu & Place Order
- Manage Order
- Manage Delivery
- Handle Payments
- Admin Reporting

Data Stores (rows):

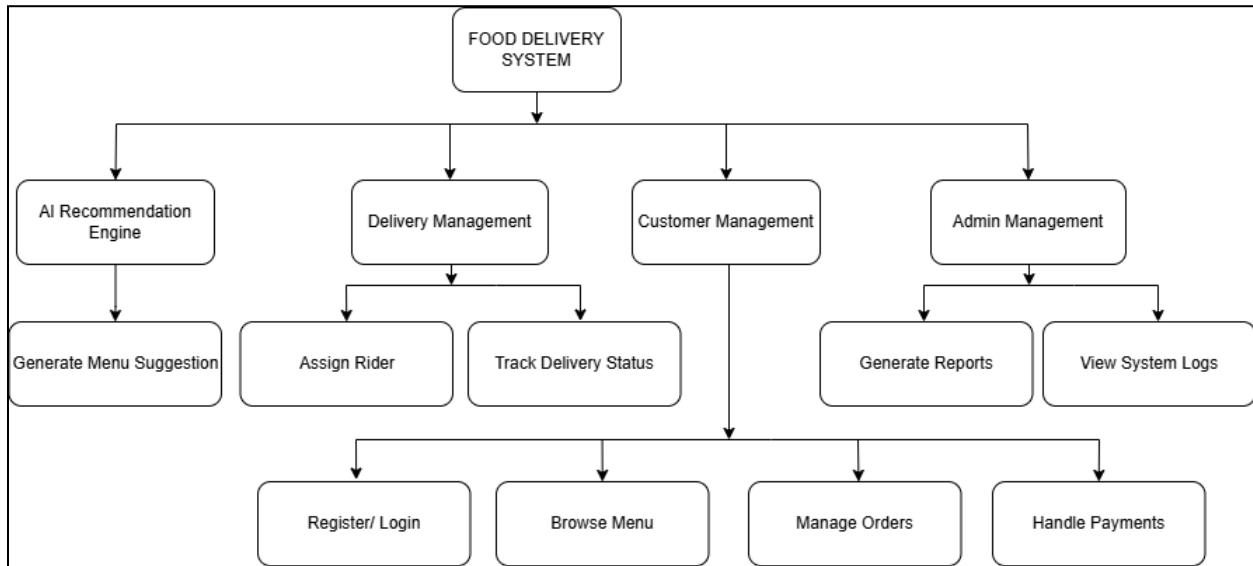
Data Store	Register/ Login	Browse Menu	Manage Order	Delivery	Payments	Reporting
Accounts (D1)	C/U	R	R			R
Orders (D2)		C/R	C/R/U	R/U		R
Menu Items (D3)		R	R			R/U
Delivery (D4)				C/U/R		R
Payments (D5)					C/U/R	R
Recommendations (D6)		C/R	R			
Logs (D7)						C/R/U

7.1.7 Event Response Table

Event	Trigger	Process	System Response
User registers	User fills signup form	Register/Login	Validate → store in Accounts → send confirmation
User logs in	User submits credentials	Register/Login	Authenticate → start session
Browsing menu	User opens app	Browse Menu	Query Menu Items → show menu
Placing an order	User checks out	Manage Order	Validate order → store → notify restaurant
Payment submitted	User confirms payment	Handle Payments	Validate → record → send receipt
Delivery assigned	Restaurant marks ready	Manage Delivery	Assign rider → generate route
Rider updates delivery status	Rider updates app	Manage Delivery	Update status → notify customer
Report requested	Admin triggers report	Admin Reporting	Generate → show report

Payment fails	Gateway error	Handle Payments	Notify user → request retry
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7.1.8 Structure Chart



7.1.9 System Architecture

Presentation Layer

- Mobile/web app (customer)
- Restaurant interface
- Rider app
- Admin web portal

Application Layer

- Business logic (process authentication, ordering, payments, delivery, reporting)
- AI recommendation module
- Notification services

Data Layer

- Centralized database cluster with:
 - Accounts
 - Orders
 - Menu Items
 - Delivery assignments
 - Payments
 - Logs

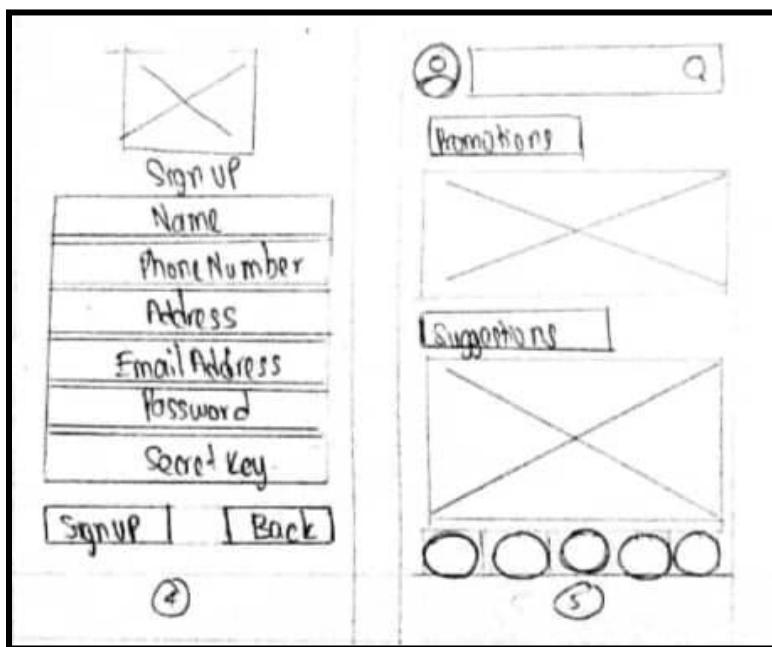
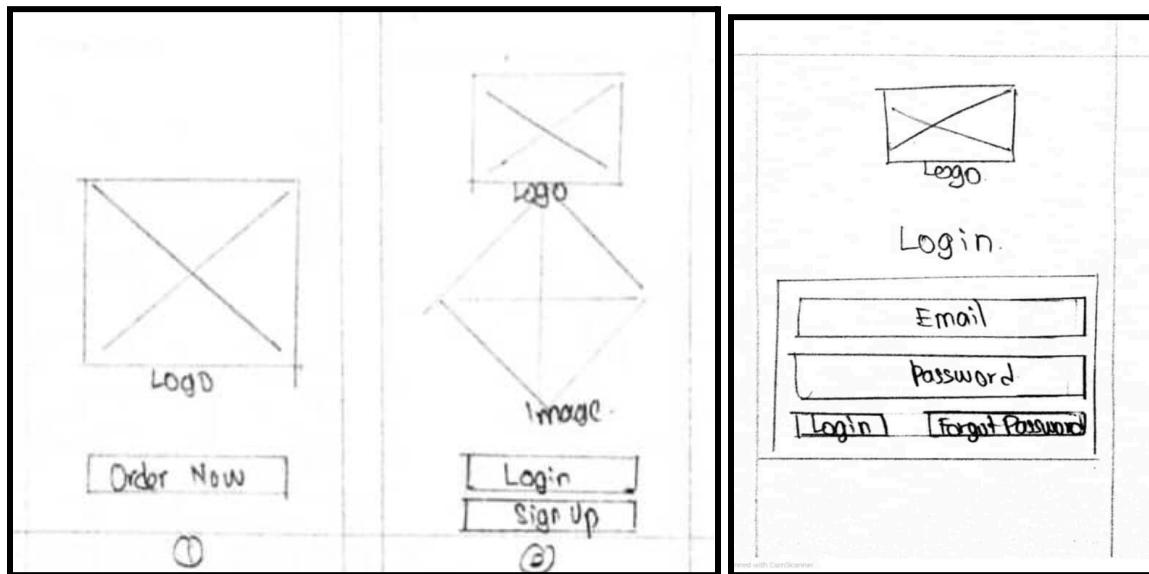
External Interfaces

- Payment gateway
- SMS/email notification services
- Mapping/routing API

Network

- Cloud hosting infrastructure
- Internet connectivity for all clients.

8.0 SYSTEM WIREFRAME (INPUT DESIGN, OUTPUT DESIGN)



Profile.

User Info Section

Dietary & Allergy Settings

Address Book

Payment Methods

Order History

Notification

Logout

Delete Account

Setup Dietary and Allergy Preferences

Select dietary preferences and allergies

Dairy-Free	ON
Gluten-Free	OFF
Vegan	OFF
Vegetarian	OFF
Peanut Allergy	ON
Seafood Allergy	ON

⑥

⑦

⑧ zu Q

Restaurant 1 Logo

Restaurant 2 Logo

Restaurant 3 Logo

Restaurant 4 Logo

Keyboard

⑨

My Order

Item 1	-1+
Item 2	-1+
Item 3	-1+

Price Time Duration

Order Now

⑩

Summary

Item 1
Item 2
Item 3

service fee Total

Price Time Duration

Pay Now

⑪

Payment Options

- Cash on Delivery
- Online Payment
- Credit or Debit Card
- E-wallet

⑫

Payment

Payment Card holder Card Number Expiry CV

ON/OFF Remember this card ON/OFF send receipt by email

Pay Now

⑬

Your Order is Success

⑭

order Confirmation

Payment Detail

Order No. Total Date & Time Payment Method Name Email

Review Done

⑮

Order Status

Cooking Almost Done Picking

Approximately 28 minutes

⑯

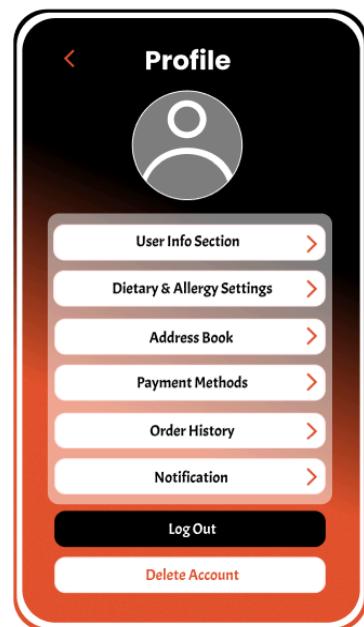
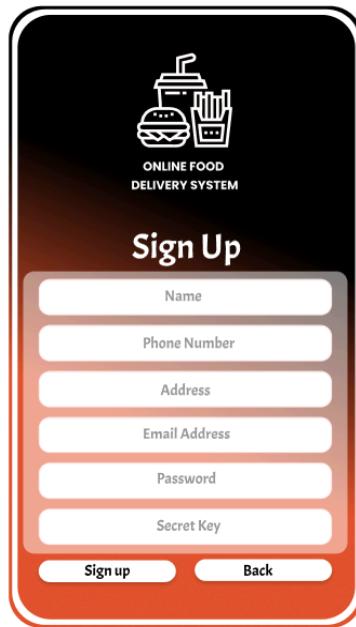
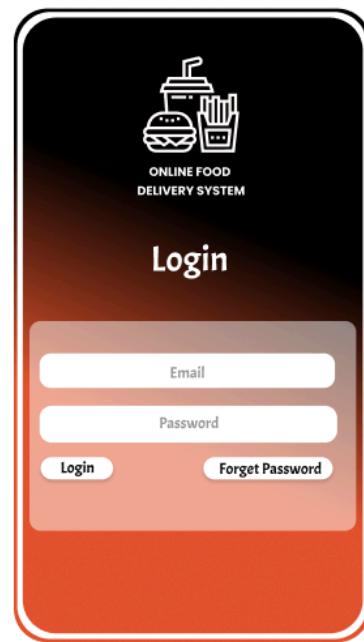
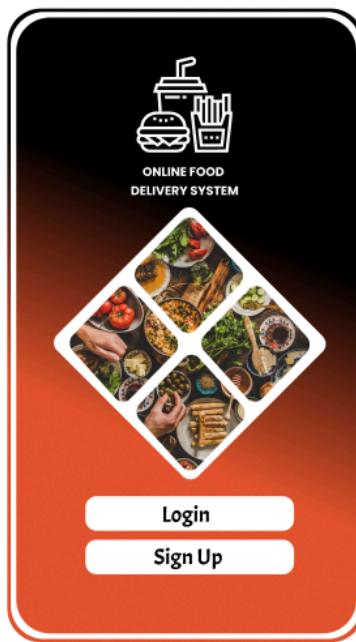
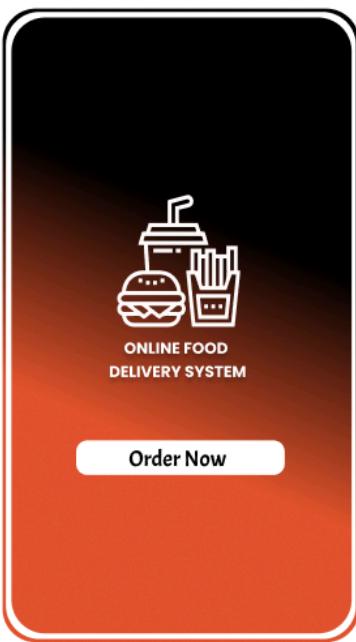
Delivery Status

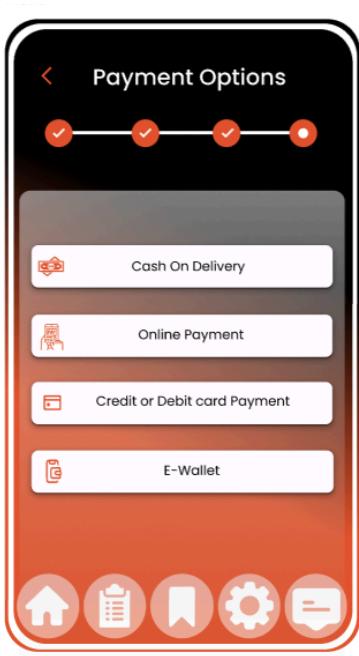
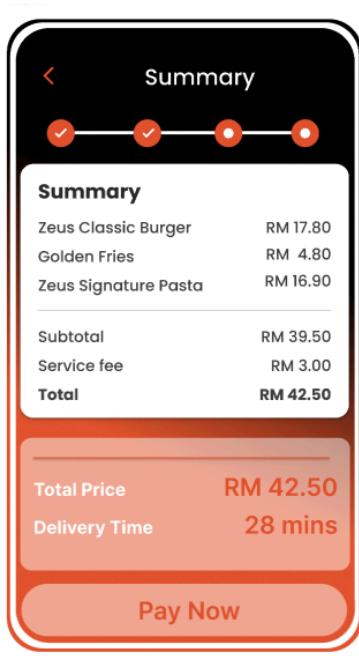
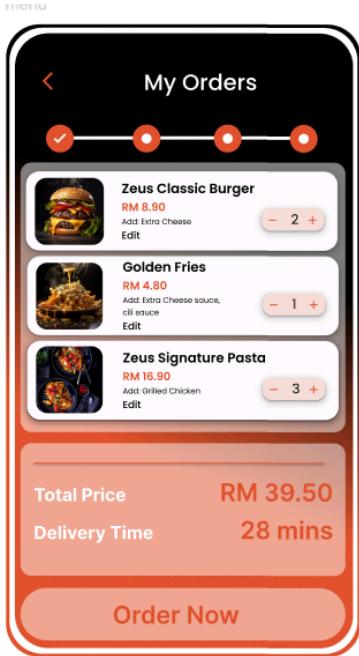
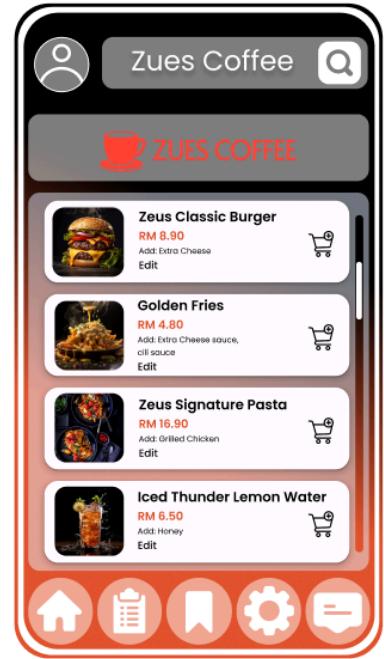
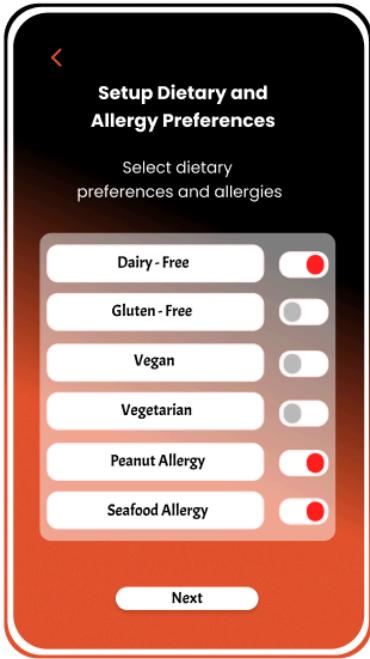
Rider Name Bike/Car Contact Rider

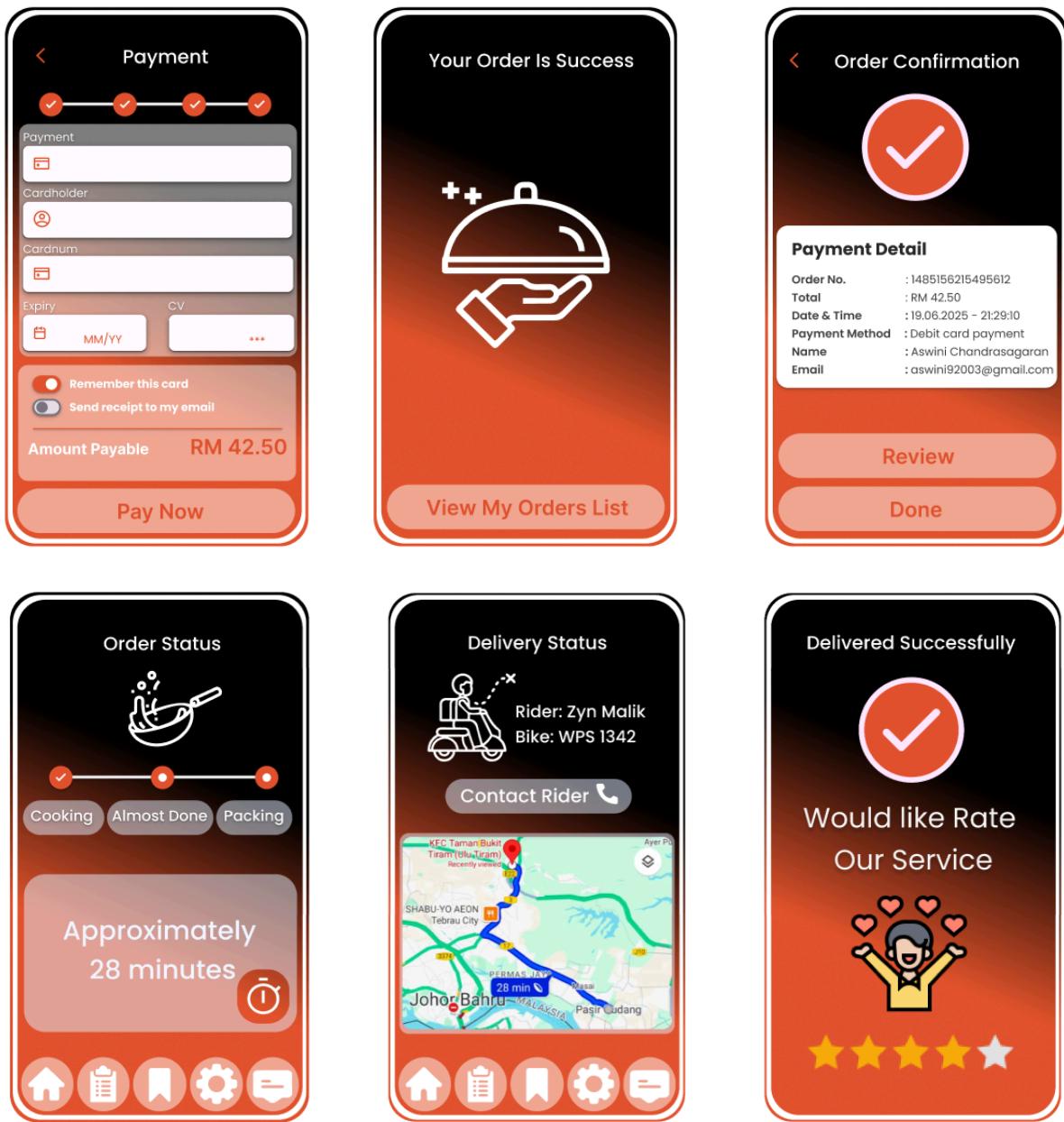
map

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9.0 SUMMARY OF THE PROPOSED SYSTEM







MEETING LOG FOR SADM PROJECT

Date : 30.06.2025

Log No.: Phase 1

TEAM NAME: GROUP 4

TEAM MOTTO: RISE TOGETHER, SHINE BRIGHT TOGETHER

TEAM GROUND RULE: FULL COMMITMENTS

Attendance:

Group Member Name	Signatures
1. ASWINI A/P CHANDRASAGARAN	
2. ARVIN A/L GURUSAMY	
3. LEAVINISH A/L BALASUBRAMANIAM	

Discussion Results/Findings:

We successfully gathered and conducted our first project meeting. During the session, we identified the target users to ensure our design aligns with their needs. We also discussed potential project titles and finalized the main project idea. Additionally, we planned the tools to be used throughout the project, including Draw.io for flowcharts, Figma for interface design, Google Drive for file sharing, and Google Forms for surveys and data collection.

Members Contributions/Ideas:

Group Member Name	Contributions/Ideas
1. ASWINI A/P CHANDRASAGARAN	<p>2.0 Background Study</p> <p>3.0 Problem Statement</p> <p>4.0 Proposed Solutions (include feasibility study – technical, operational, economical - CBA)</p> <p>5.0 Objectives</p> <p>6.0 Scope of the Project</p> <p>7.1 Human Resource</p> <p>7.2 Work Breakdown Structure (WBS)</p> <p>7.3 PERT Chart (based on WBS)</p>
2. ARVIN A/L GURUSAMY	<p>8.0 Benefit and Overall Summary of Proposed System</p> <p>-Give ideas and support</p>
3. LEAVINISH A/L BALASUBRAMANIAM	<p>1.0 Introduction</p> <p>2.0 Background Study</p> <p>3.0 Problem Statement</p> <p>4.0 Objective</p> <p>5.0 Scope of the Project</p> <p>7.4 Gantt Chart</p>

MEETING LOG FOR SADM PROJECT

Date : 30.06.2025

Log No.: Phase 2

TEAM NAME: GROUP 4

TEAM MOTTO: RISE TOGETHER, SHINE BRIGHT TOGETHER

TEAM GROUND RULE: FULL COMMITMENTS

Attendance:

Group Member Name	Signatures
1. ASWINI A/P CHANDRASAGARAN	
2. ARVIN A/L GURUSAMY	
3. LEAVINISH A/L BALASUBRAMANIAM	

Discussion Results/Findings:

During our group discussion, we prepared a questionnaire and shared it with our group members to gather their opinions and confirm if we were heading in the right direction. This early feedback helped us understand the expectations and preferences of our target users. One key finding from the responses was that most users are drawn to designs that are more engaging and visually interesting. This insight will guide us in creating a user-friendly and attractive interface for our project.

Members Contributions/Ideas:

Group Member Name	Contributions/Ideas
1. ASWINI A/P CHANDRASAGARAN	<p>4.1 Method Used(Questionnaire)</p> <p>5.0 Requirement Analysis (Based on AS-IS Analysis)</p> <p>5.1 Current Business Process (scenarios, workflow)</p> <p>5.2 Functional Requirements (Input, Process, Output)</p> <p>5.3 Non-functional Requirements</p> <p>5.4 Logical DFD (AS-IS System)</p> <p>6.0 Summary of Requirement Analysis Process</p>
2. ARVIN A/L GURUSAMY	<p>4.1 Method Used(Questionnaire)</p> <p>4.2 Summary from Method Used</p>
3. LEAVINISH A/L BALASUBRAMANIAM	<p>4.1 Method Used(Questionnaire)</p> <p>4.3 Impact on System Requirements</p> <p>5.4 Logical DFD (AS-IS System)</p>

MEETING LOG FOR SADM PROJECT

Date : 30.06.2025

Log No.: Phase 3

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Discussion Results/Findings:

We successfully designed a user-friendly prototype that focuses on simplicity and ease of use. Based on user feedback, we also improved several features to enhance overall functionality and user experience. As a result, the project has achieved its goal of benefiting the target users by providing a more efficient and accessible solution that meets their needs.

Members Contributions/Ideas:

Group Member Name	Contributions/Ideas
1. ASWINI A/P CHANDRASAGARAN	<p>6.1 Logical DFD TO-BE system (Context Diagram, Diagram 0, Child)</p> <p>6.2 Process Specification (based on Logical DFD TO-BE)</p> <p>7.1 Physical DFD TO-BE system (Diagram 0, Child, Partitioning, CRUD Matrix, Event Response Table, Structure Chart, System Architecture)</p> <p>8.0 System Wireframe (Input Design, Output Design)</p> <p>9.0 Summary of the proposed system</p>
2. ARVIN A/L GURUSAMY	9.0 Summary of the proposed system
3. LEAVINISH A/L BALASUBRAMANIAM	<p>6.1 Logical DFD TO-BE system (Context Diagram, Diagram 0, Child)</p> <p>8.0 System Wireframe (Input Design, Output Design)</p> <p>9.0 Summary of the proposed system</p>