COMP 3500 Software Engineering
Food Ordering and Tracking System

Group 14

Project background

Many small restaurants continue to use manual ordering which presents delays, errors and poor customer experience.

This is presumably a chain restaurant, so it probably has individual memberships and vouchers.

Our project will target the enhancement of customer experience when it comes to ordering and efficiency.

Stakeholder

Customer
Register, Browse, Order, Track

Kitchen
Manage tables, Modify orders

Admin
full permission, View & update orders

Manager
Menu & staff management

Staff
System setup, Data import

Functional Requirements

Customer

- Register and login
- Browse menu by categories
- Place orders (dine-in/takeaway)
- Customize menu items
- Track order status in real-time
- View order history

Kitchen

- Manage tables
- Create and modify orders
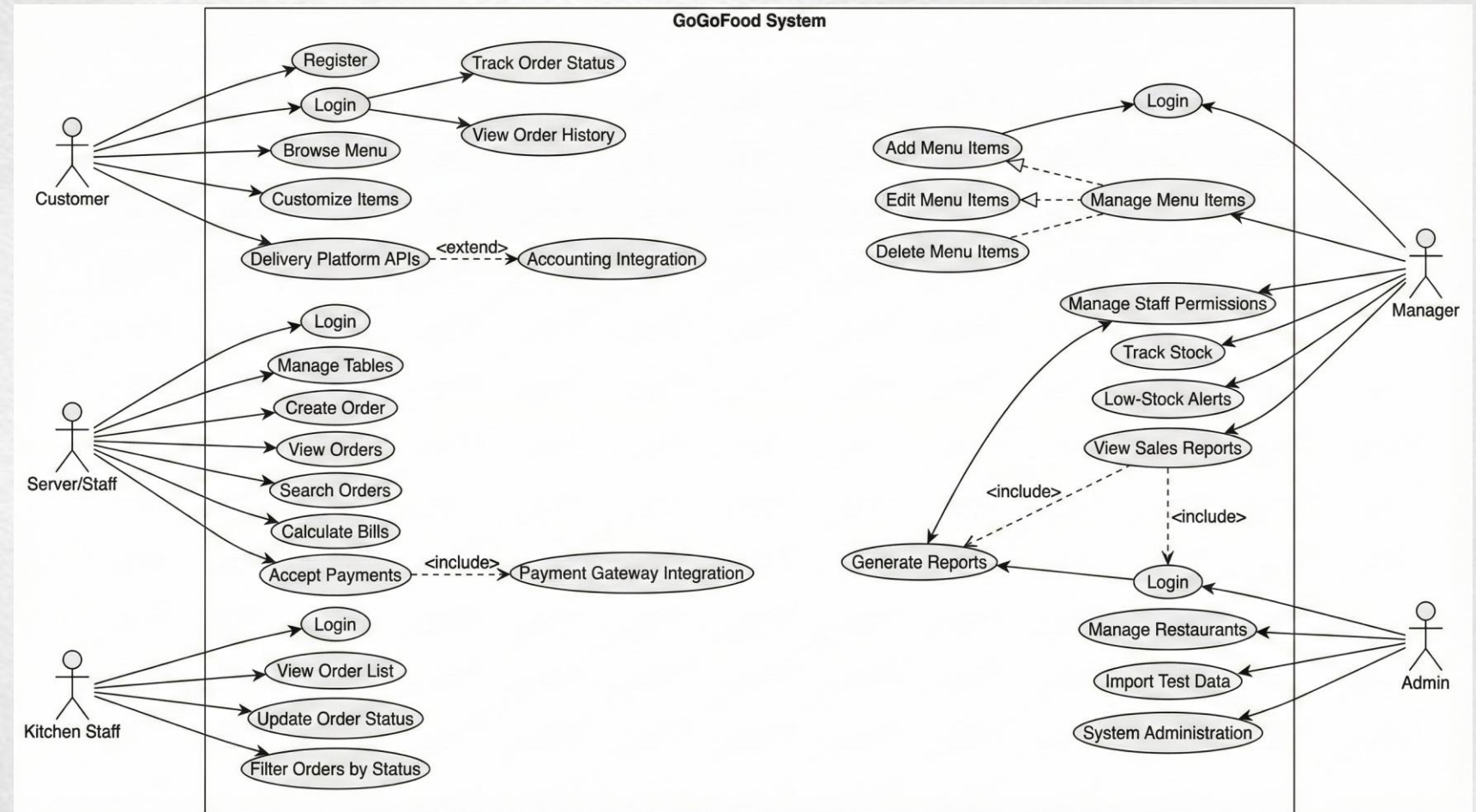- Search and view orders
- View kitchen orders

Admin

- View real-time order list
- Update order status
- Filter orders by status

Manager

Manage menu items (add/edit/delete)
- Manage staff permissions (RBAC)
- View and generate sales reports

Staff

System administration
- Manage restaurants
- Import test data

GoGoFood System use case diagram showing actors Customer, Server/Staff, Kitchen Staff, Manager, and Admin with their associated use cases.

NON Functional Requirements

Performance

- Order confirmation within 1.0 seconds (98% of the time)
- Real-time updates within 2 seconds
- Menu browsing < 500ms

Reliability

- Downtime ≤ 10 minutes/month
- 99.9% uptime target
- Data consistency across applications

Security

- Secure authentication
- Encrypted payment data
- Protected customer data

Usability

- Intuitive customer interface
- Fast interface
- Clear kitchen display

Scalability

- Handle increasing users
- Maintainable code structure

System implementation

Agile Development Plan

Sprint	Duration	Sprint Goal	Key Activities & User Stories to Implement	Artifacts
Sprint 0	1-2 Days	**Project Setup & Planning**	- Establish project architecture (Client-Server, MVC).	Initial Product Backlog
			- Set up Android Studio and Firebase project.	
			- Refine and prioritize the initial Product Backlog.	
Sprint 1	2 Weeks	**Core Ordering & Kitchen View**	- **UC-1:** Customer can view the menu and place an order.	Sprint 1 Backlog, Potentially Shippable Increment 1
			- **UC-7:** Kitchen staff can see a real-time list of new orders.	
Sprint 2	2 Weeks	**Order Management & Status Tracking**	- **UC-4:** Server can create a table order.	Sprint 2 Backlog, Potentially Shippable Increment 2
			- **UC-5:** Server can modify an existing order.	
			- **UC-3:** Customer can track their order status.	
			- **UC-8:** Kitchen staff can update an order's status.	
Sprint 3	2 Weeks	**Management Features & Finalization**	- **UC-9:** Manager can add/edit menu items.	Sprint 3 Backlog, Final Product
			- **UC-10:** Manager can generate a daily sales report.	
			- Final testing, bug fixing, and UI polish.	
			- Prepare for deployment.	
Future Sprint	TBD	**Payment & Billing Integration**	- **UC-2:** Customer can pay for an online order.	Future Sprint Backlog
			- **UC-6:** Server can process a bill (including splits/discounts).	
			- Implement secure payment gateway integration.	

System implementation
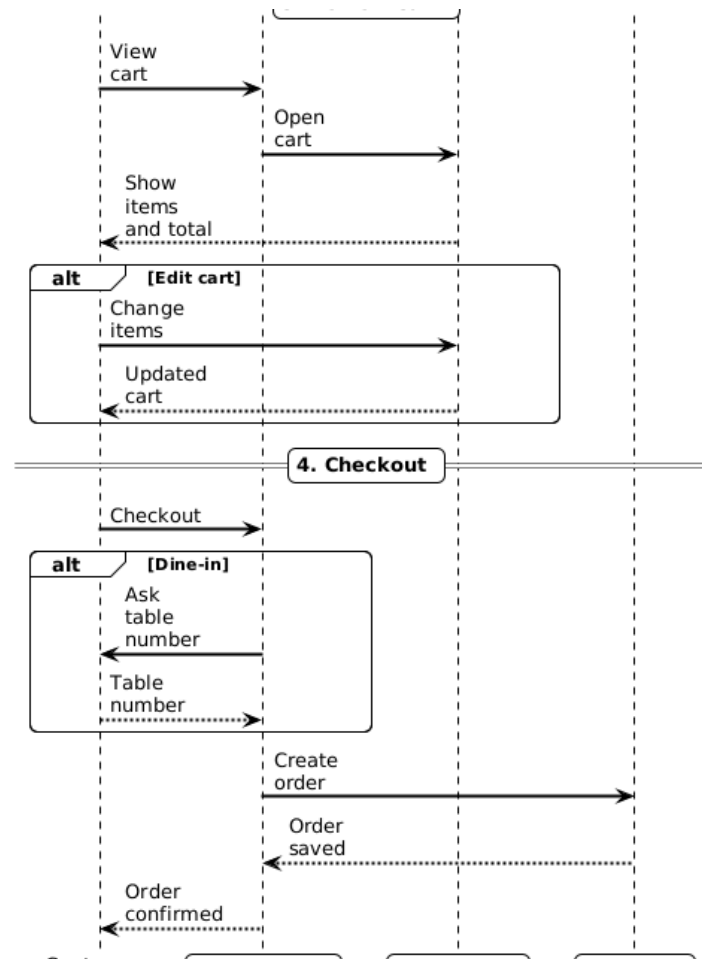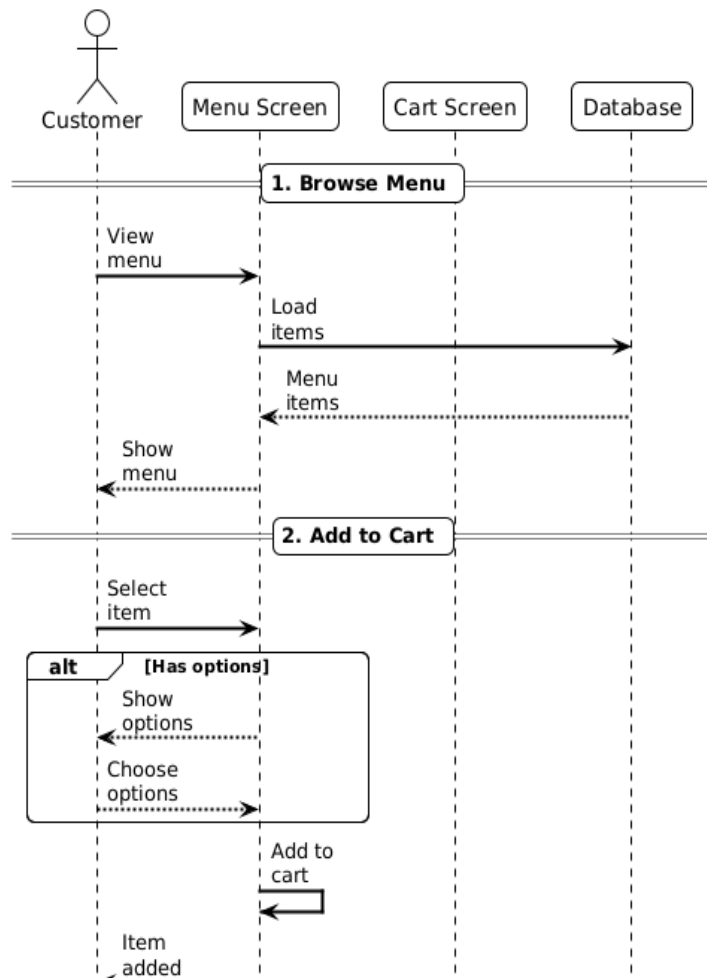
- **FRONTEND**
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- **Platform:** Android Native
- **Language:** Java
- **SDK:** Min 24 | Target 36
- **IDE:** Android Studio
- **UI Framework:** Material Design Components
- **Jetpack:** AppCompat, RecyclerView, ConstraintLayout

- **BACKEND & DATABASE**
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Backend: Firebase (BaaS)
- **Database:** Cloud Firestore (NoSQL)
- **Authentication:** Firebase Auth
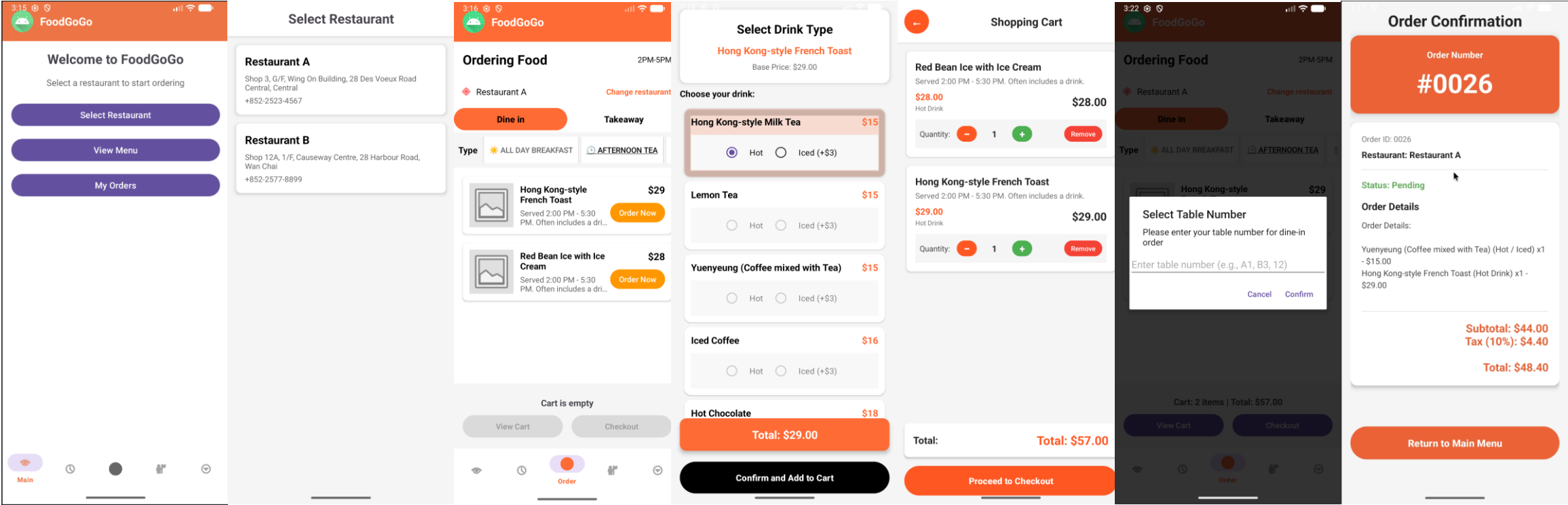- **Real-time:** Firestore Listeners

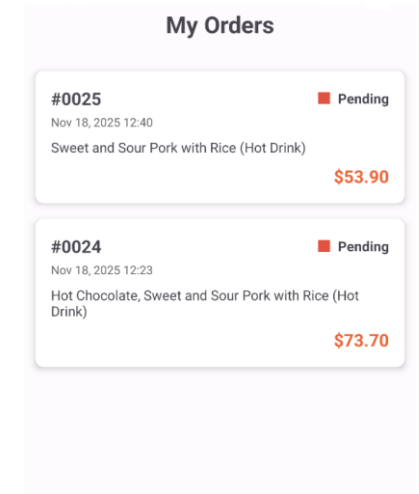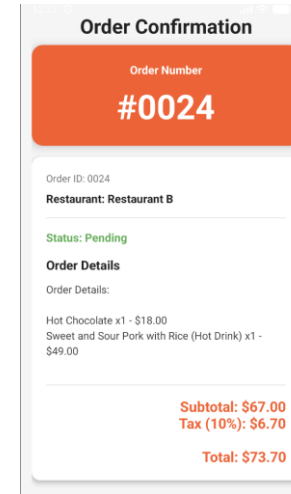# System modelling

Use ordering function as an example:

Customer →

Browse menu →

Select items →

 Make order →

Payment →

Order Confirmed

System design

Software Testing/ Validation

- Acceptance Testing: Customer place order successful

- Unit Test: Verified the price calculation

- Performance Testing: Testing the system response time and make sure the system can run every function within 2 seconds

Order Confirmation

Order Number
#0024

Order ID: 0024

Restaurant: Restaurant B

Status: Pending

Order Details

Order Details:

Hot Chocolate x1 - $18.00
Sweet and Sour Pork with Rice (Hot Drink) x1 - $49.00

Subtotal: $67.00
Tax (10%): $6.70

Total: $73.70

My Orders

#0025   ■ Pending
Nov 18, 2025 12:40
Sweet and Sour Pork with Rice (Hot Drink)
$53.90

#0024   ■ Pending
Nov 18, 2025 12:23
Hot Chocolate, Sweet and Sour Pork with Rice (Hot Drink)
$73.70

Test Case ID	Description	Expected Result	Status
TC-01	User can select the restaurant and ordering		✅ PASS
TC-02	Verified price calculation	Correct price	✅ PASS
TC-03	Ordering status update		✅ PASS
TC-04	Generate order code & details	Show all order details	✅ PASS
TC-05	Member login function	Member/admin can login successfully	✅ PASS