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Restaurants Management System Analysis

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Restaurant Management System Requirements Document

1. Introduction

1.1 Purpose

This document outlines the requirements for developing a comprehensive restaurant management system for a company with multiple restaurants and branches.

1.2 Scope

The system aims to optimize restaurant operations, enhance customer experience, and improve overall efficiency and profitability. It will cover restaurant and branch management, menus and products, order and reservation handling, payment processing, reporting, analytics, integration, data security, and scalability.

2. System Requirements

2.1 Functional Requirements

2.1.1 Restaurant and Branch Management

Features:

- Centralized interface for multi-restaurant and branch management.

- CRUD operations for restaurants and branches.

- Role-based permission management.

2.1.2 Menus and Products Management

Features:

- Comprehensive menu management for each restaurant.

- Customizable item details (prices, combinations, discounts).

- CRUD operations for menu items.

2.1.3 Management of Orders and Reservations

Features:

- Order recording and tracking from reception to delivery.

- Customer table reservations with preferred times.

2.1.4 Payment System

Features:

- Interface for cash, credit card, and electronic wallet payments.

- Secure and reliable processing of financial information.

2.1.5 Reports and Analytics

Features:

- Detailed reports on financial performance, operations, and inventory.

- Customizable reports and analyses for management decisions.

2.1.6 Integration with Other Applications

Features:

- Seamless integration with accounting systems and inventory management systems.

- Ensuring harmony and effectiveness in operations.

2.2 Non-Functional Requirements

2.2.1 Data Security

Features:

- Robust security system to protect sensitive data.

- Measures to prevent unauthorized access.

2.2.2 Scalability

Features:

- Design for scalability to accommodate future needs and increased business volume.

- Adaptable architecture to support growth.

3. System Analysis

3.1 Restaurant Operations Analysis

3.1.1 Current Processes

Document and analyze the existing restaurant operations, including order processing, reservation handling, inventory management, and employee workflows.

3.1.2 Identify Strong Points

Identify the strengths in the current operations that should be retained and enhanced in the new system.

Strong Points:

- Efficient order processing system, Established reservation management procedures, Adequate inventory tracking mechanisms, Well-defined employee workflows

3.1.3 Address Weaknesses

Highlight weaknesses in the current processes and propose solutions or improvements that the new system can address.

Weaknesses:

- Manual and time-consuming order tracking, Limited integration between branches, Lack of real-time reporting capabilities.

3.1.4 Opportunities for Improvement

Identify opportunities for improvement, such as streamlining processes, reducing bottlenecks, and enhancing customer satisfaction.

Opportunities for Improvement:

- Automation of order tracking and processing, Enhanced integration between different branches, Implementation of real-time reporting for better decision-making.

3.2 User Needs Analysis

3.2.1 Stakeholder Identification

Identify and categorize different stakeholders, including restaurant management, employees, and customers.

3.2.2 User Personas

Create user personas for each category of users, outlining their goals, preferences, and pain points.

Administration of the Whole Platform Application:

- **Goal**: Optimize overall platform operations and management.

- **Preferences**: Centralized interface, robust permission management, and comprehensive analytics.

Restaurant Managers for Multiple Branches:

- **Goal**: Streamline branch-specific operations.

- **Preferences**: Efficient multi-branch management, customizable menus, and real-time reporting.

Branch Managers for Multiple Departments:

- **Goal**: Ensure smooth departmental workflows.

- **Preferences**: Role-based access, detailed order and inventory tracking, and employee management.

Department Managers for Multiple Employees:

- **Goal**: Enhance team productivity.

- **Preferences**: Task automation, employee scheduling, and performance tracking.

Employees for Multiple Jobs:

- **Goal**: Streamline daily tasks and responsibilities.

- **Preferences**: User-friendly interfaces, task automation, and real-time communication tools.

Customers for Multiple Services:

- **Goal**: Enjoy an improved dining experience.

- **Preferences**: Easy reservation system, diverse menu options, and efficient order processing.

3.2.3 Feature Prioritization

Prioritize features and functionalities based on the needs and preferences of each user category.

High Priority Features:

1. Automated Order Processing

2. Real-time Reporting

3. Seamless Integration Between Branches

4. User-Friendly Interfaces for Employees

5. Online Reservation System.

Medium Priority Features:

1. Inventory Tracking and Management

2. Customer Feedback System

3. Loyalty Program Integration

Low Priority Features:

1. Additional Payment Options

2. Integration with External Applications (Accounting, Inventory).

3.2.4 User Feedback

Gather feedback from potential users to ensure that the proposed system aligns with their expectations and needs.

3.3 Analysis of Functional and Non-Functional Requirements

- Detailed analysis of functional requirements (**use case specifications diagram**).

- Address non-functional requirements (security, performance, compatibility).

4. System Design

4.1. Analytical Study

4.1.1 Workflow Analysis

Understand the end-to-end workflow of the restaurant management system, detailing how different modules and components interact. Identify key processes, user interactions, and data flows.

- Activity Diagram

4.1.2 Dependency Analysis

Analyze dependencies between system modules and external components. Identify critical dependencies that may impact system performance, reliability, or security.

4.1.3 Use Case Diagrams

Develop **use case diagrams** that illustrate the interactions between system components and different user roles. Clearly define the actions that users can perform within the system.

4.2. Design Study

4. 2.1 Architecture

Define the overall architecture of the restaurant management system. **microservices architecture for modularity and scalability** is most suitable.

4.2.2 Technology Stack

Specify the technology stack for the system, including programming languages, frameworks, databases, and any third-party tools or services. Consider factors such as scalability, maintainability, and compatibility with existing systems.

  - **Frontend**: React.js

  - **Backend**: Node.js with Express

- **Database**: MongoDB for flexibility in schema

4.2.3 Database Design

Design the database schema, specifying tables, relationships, and constraints. Consider normalization to eliminate data redundancy and ensure data integrity. Choose an appropriate database management system (DBMS).

4.2.4 User Interface Design

Ensure that the user interfaces are intuitive, user-friendly, and aligned with the overall user experience goals.

4.2.5 Security Design

Outline the security measures to be implemented, including authentication, authorization, encryption, and data integrity checks. Consider industry best practices and compliance requirements to ensure a robust security posture.

4.3. Work Mechanisms

4.3.1 User Interaction

Describe how users will interact with the system. Define the user roles and their respective permissions. Outline the steps for common user activities, such as adding new restaurants, managing menus, and processing orders.

4.3.2 Data Flow DFD

Illustrate how data will flow through the system. Specify how information is captured, processed, stored, and retrieved. Consider asynchronous and synchronous data processing where applicable.

4.3.3 Integration Points

Identify integration points with external applications, such as accounting systems and inventory management systems. Define the communication protocols and data formats for seamless integration.

4.4 Automation Solutions

Identify routine tasks that can be automated to improve operational efficiency.

Implement automation solutions using best practices.

Explore the integration of machine learning algorithms for predictive analytics.

4.4.1 Automation Solutions

Automation Solutions:

- Automated order status updates for real-time tracking.

- AI-driven analytics for predicting popular menu items.

4.4.2 Information Collection Methods

Information Collection:

- Real-time order data collection from customers.

- Batch processing for nightly financial reports.

5. Appendix (System Models)

5.1. Use Case Diagram

5.2. Use Case Specification Table

5.3. Class Diagram

5.4. Activity Diagram

5.5. Sequence Diagram

5.6. Data Flow Diagram

5.7. Collaboration Diagram

5.8. Component Diagram

5.9. Deployment Diagram

5.1. Use Case Diagram Level 0

5.1. Use Case Diagram Level 0: Admin

RestaurantManagementSystem

- Manage Restaurants
- Manage Branches
- Assign Permissions
- Generate Reports
- Customize Analytics
- Integrate with Accounting
- Integrate with Inventory
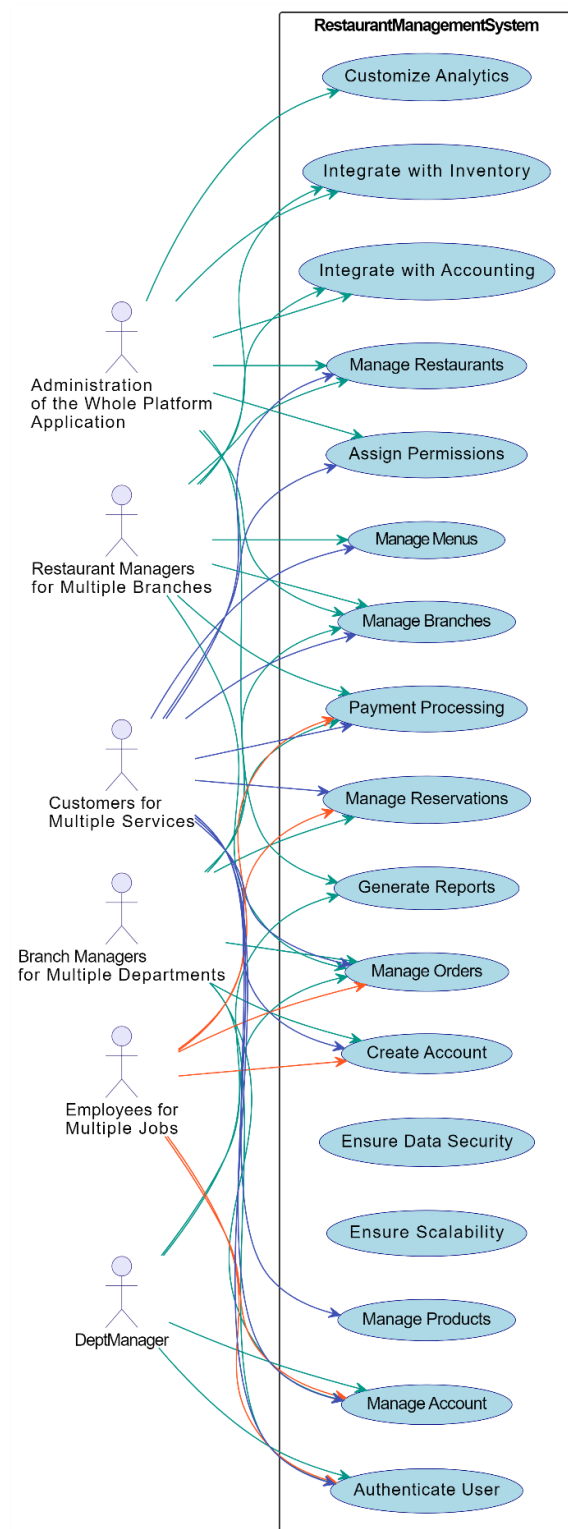
Administration
of the Whole Platform
Application
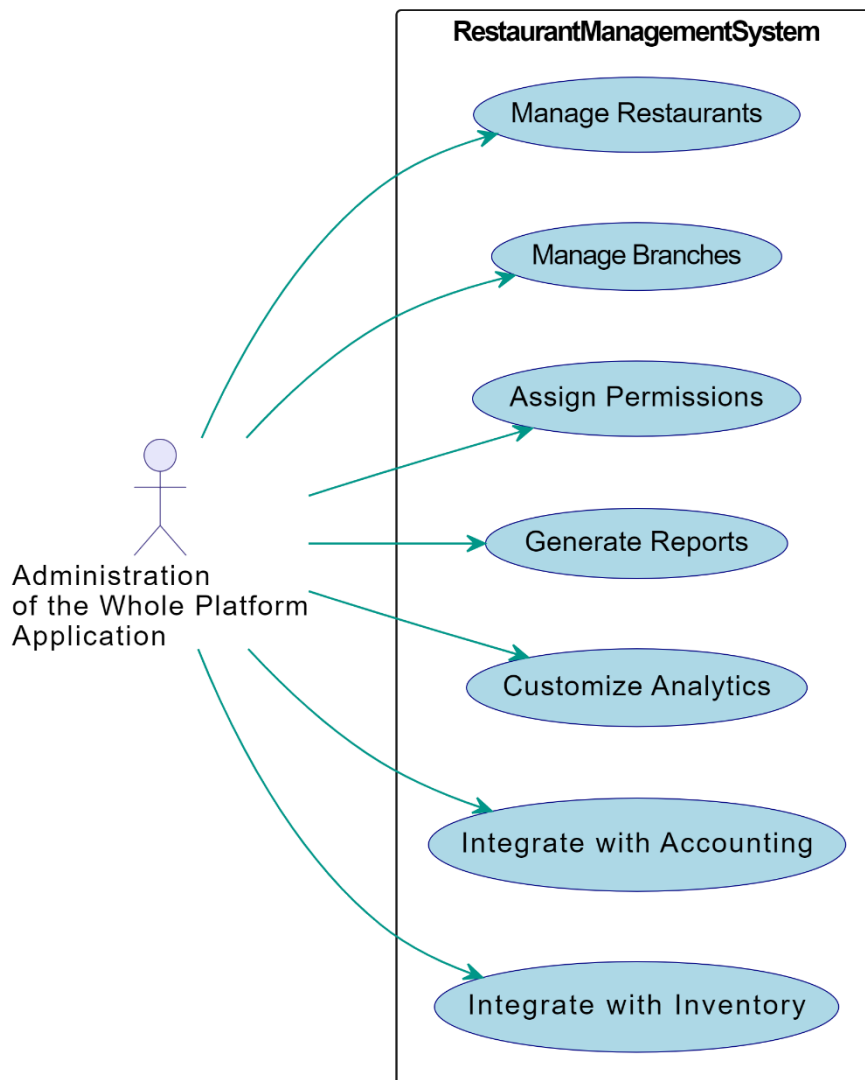
5.1. Use Case Diagram Level 0: Restaurant Manager
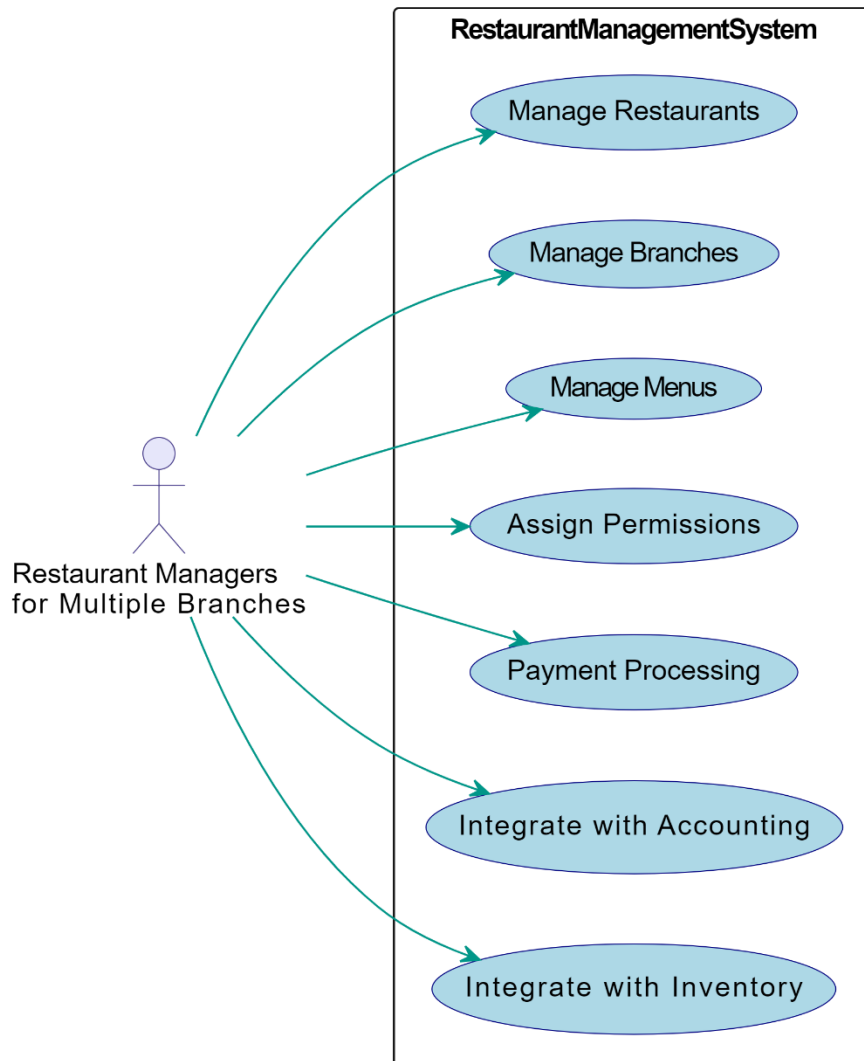
5.1. Use Case Diagram Level 0: Branch Manager
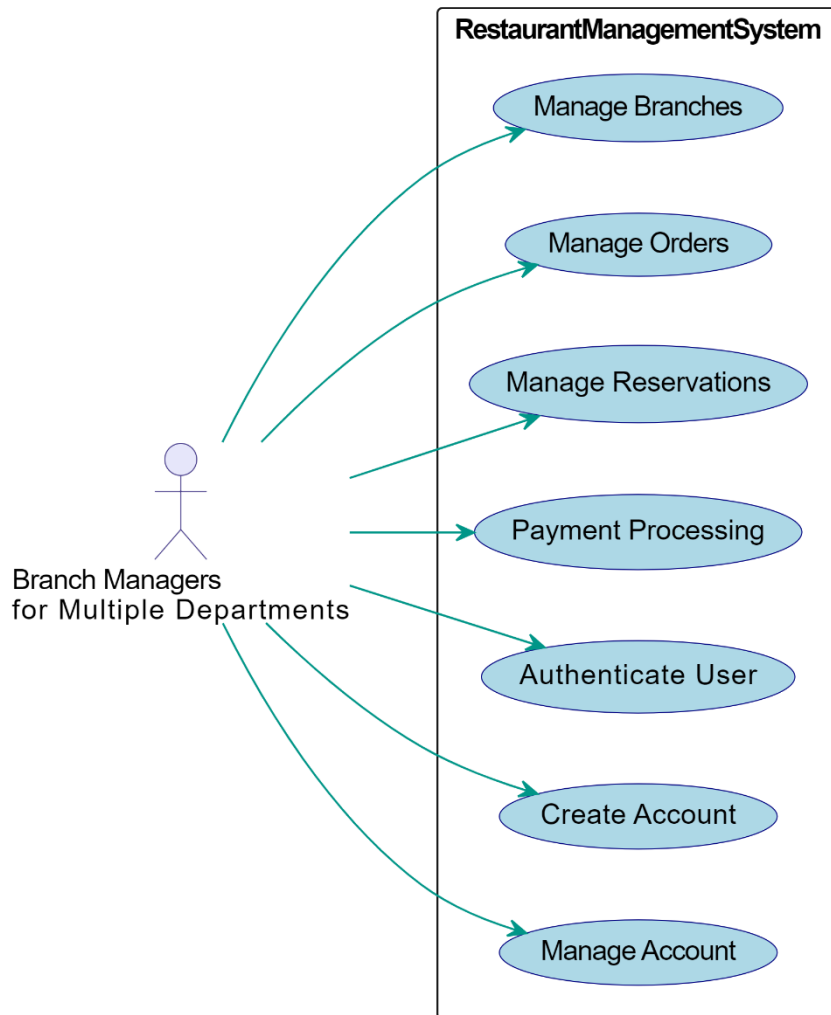
5.1. Use Case Diagram Level 0: Employees Belong to Department

5.1. Use Case Diagram Level 0: Customer

RestaurantManagementSystem
- Place Order
- Make Reservation
- Request Assistance
- Provide Feedback
- Manage Account

Customers for Multiple Services

5.1. Use Case Diagram Level 1
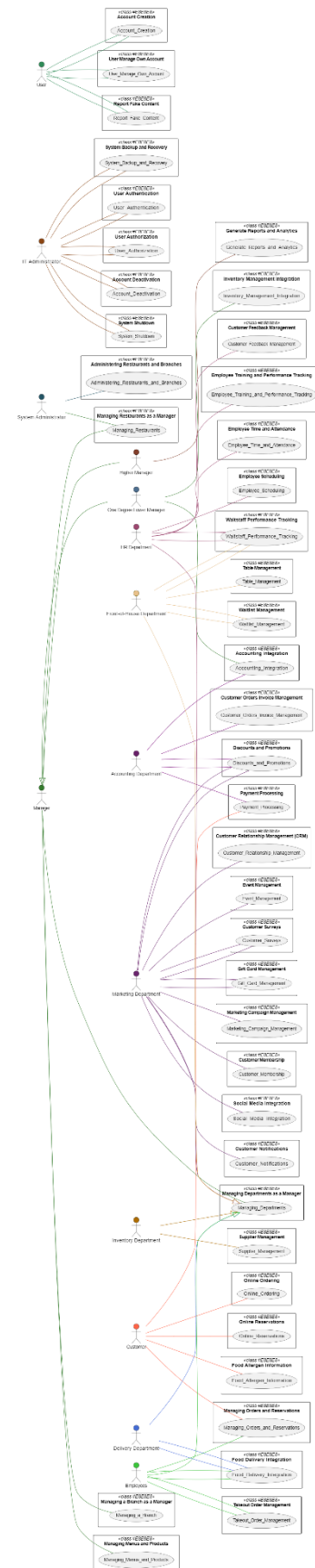
5.2. Use Case Specification Table

Use Case ID: UC-01 Manage Restaurants and Branches

Use Case 001A: Administer Restaurants and Branches

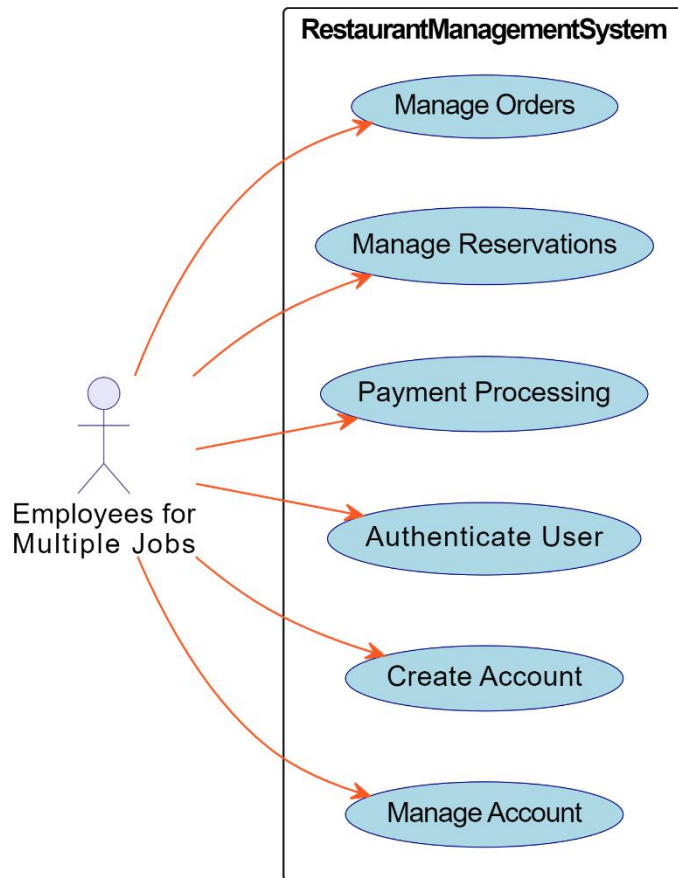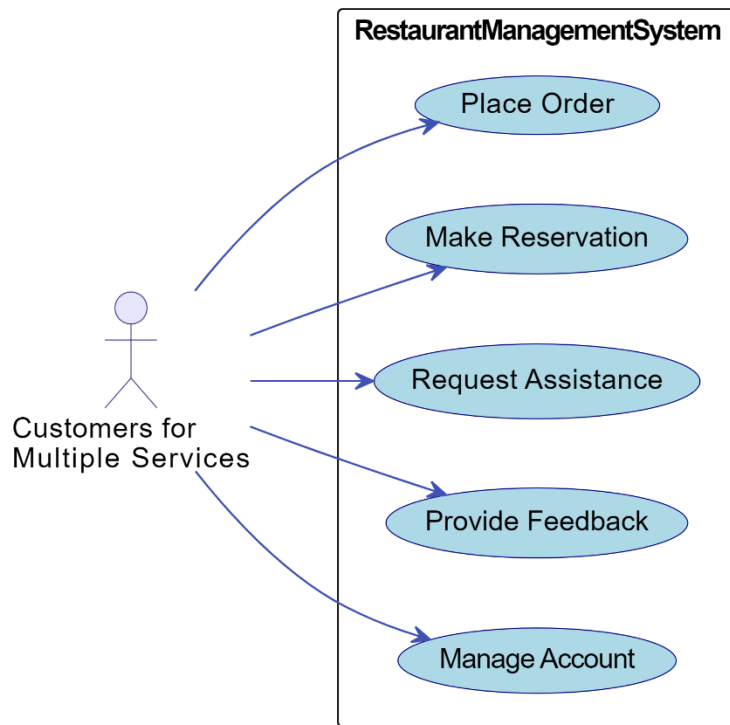| Attribute	Value
Use Case ID	UC001A
Use Case Name	Administer Restaurants and Branches
Description	Allows the system administrator to add, delete, and edit restaurants and branches, and assign permissions to employees at the administration level.
Primary Actor	System Administrator
Preconditions	User is authenticated as a system administrator.
Postconditions	Changes to restaurants and branches are saved. Permissions are updated.
Main Flow	1. Administrator selects "Manage Restaurants and Branches" option. 2. Administrator adds, deletes, or edits restaurant and branch information. 3. Administrator assigns or updates permissions for managers and employees.
Alternate Flows	a. If an error occurs during the addition, deletion, or editing of restaurant and branch information, the system notifies the administrator of the error. b. The administrator is provided with options to either retry the operation, choose an alternative action, or seek technical support. c. If the error is due to a permissions assignment or update failure, the system rolls back the changes made and notifies the administrator. d. The administrator can then review and adjust permissions before reattempting the operation. e. If the issue persists, the administrator may escalate the error to technical support for resolution."

Use Case 001B: Manage Restaurants as a Restaurant Manager

Attribute	Value

Use Case ID	UC001B
Use Case Name	Manage Restaurants as a Restaurant Manager
Description	Enables a restaurant manager to oversee and manage branches, menus, and employees within their assigned restaurant.
Primary Actor	Restaurant Manager
Preconditions	User is authenticated as a restaurant manager.
Postconditions	Changes to menus, branches, and employee assignments are saved.
Main Flow	1. Restaurant Manager selects "Manage Restaurant" option. 2. Manager oversees and manages branches, menus, and employee assignments within their restaurant. 3. Manager makes necessary updates.
Alternate Flows	-

Use Case 001C: Manage Branch as a Branch Manager

Attribute	Value
Use Case ID	UC001C
Use Case Name	Manage Branch as a Branch Manager
Description	Allows a branch manager to manage departments, employees, and operations within their assigned branch.
Primary Actor	Branch Manager
Preconditions	User is authenticated as a branch manager.
Postconditions	Changes to departments, employees, and operations are saved.
Main Flow	1. Branch Manager selects "Manage Branch" option.

	2. Manager oversees and manages departments, employees, and operations within their branch. 3. Manager makes necessary updates.
Alternate Flows	-

Use Case 001D: Manage Departments as a Department Manager

Attribute	Value
Use Case ID	UC001D
Use Case Name	Manage Departments as a Department Manager
Description	Enables a department manager to oversee and manage employees within their assigned department.
Primary Actor	Department Manager
Preconditions	User is authenticated as a department manager.
Postconditions	Changes to employees and department details are saved.
Main Flow	1. Department Manager selects "Manage Department" option. 2. Manager oversees and manages employees within their department. 3. Manager makes necessary updates.
Alternate Flows	-

Use Case ID: UC-02

Feature	Values
Use Case ID	UC-02
Use Case Name	Manage Menus and Products

Description	Allows Branch Management to oversee the addition, editing, and deletion of items in menus. Enables setting prices, combinations, and discounts.
Primary Actor	Branch Manager
Secondary Actor	Kitchen Staff Department Manager Accountment Manager
Preconditions	Restaurants and branches are set up.
Postconditions	Changes to menus and products are saved.
Main Flow	1. The user being authorized selects "Manage Menus." 2. The system displays a list of existing menus. 3. The authorized user selects an option (add, edit, delete). 4. The user provides the necessary information. 5. System saves changes.
Alternate Flows	-

Use Case ID: UC-03

Feature	Values
Use Case ID	UC-03
Use Case Name	Manage Orders and Reservations
Description	Records customer orders and tracks from reception to delivery. Allows table reservations with preferred times.
Primary Actor	Employee (Reception), Customer (Online)
Secondary Actors	Customer (Manual)
Preconditions	Menu items are available, and the system is operational.
Postconditions	Order is recorded and tracked. Reservation is confirmed.

Main Flow	1. User (Customer or Employee) selects "Manage Orders and Reservations" from the system.
	2. System displays order and reservation management options.
	3. The user selects an option (record order, track order, make reservation).
	4. For recording orders:
	a. If Employee:
	i. Employee provides necessary information, including menu items and customer details.
	ii. The system records the order and initiates the preparation process.
	b. If Customer:
	i. Customer views menu options and selects items to order.
	ii. Customer provides necessary details (e.g., table number).
	iii. System records the order and confirms to the customer.
	5. For tracking orders:
	a. User selects the order tracking option.
	b. System displays real-time status updates from reception to delivery.
	6. For making reservations:
	a. User selects the reservation option.
	b. User provides necessary reservation details, including preferred times.
	c. System confirms the reservation and updates availability.
	7. System confirms the order or reservation to the respective User.
Alternate Flows	-

Use Case ID: UC-003A

Feature	Values
Use Case ID	UC-003A
Use Case Name	Online Ordering
Description	Facilitates online ordering. This use case empowers customers to seamlessly browse and order items online.
Primary Actor	Customer
Preconditions	Online ordering system is set up.

Postconditions	Customer orders are successfully processed, and all related data are updated.
Main Flow	1. The Customer opens the mobile app. 2. The Customer selects items and adds them to the cart. 3. The Customer provides necessary information. (make exception for payment) 4. The system processes the order, and data is updated.
Alternate Flows	-

Use Case ID: UC-003B

Feature	Values
Use Case ID	UC-003B
Use Case Name	Online Reservations
Description	Allows customers to make reservations online. This use case enables customers to conveniently reserve tables through an online platform.
Primary Actor	Customer
Preconditions	Reservation system is set up.
Postconditions	Customer reservation is successfully confirmed.
Main Flow	1. Customer visits the online reservation platform. 2. Customer selects date, time, and number of persons. 3. Customer provides necessary information. 4. System confirms the reservation.
Alternate Flows	-

Use Case ID: UC-04

Feature	Values
Use Case ID	UC-04
Use Case Name	Payment Processing

Description	Provides interfaces for cash, credit card, and electronic wallet payments. Ensures secure and reliable financial transactions.
Primary Actor	Employee (Casher)
Secondary Actors	Customer
Preconditions	The order is confirmed, and the system is operational.
Postconditions	Payment is processed securely.

Main Flow	1. Employee or Customer selects "Process Payment."
	
	2. System displays available payment options.
	
	3. User (Employee or Customer) selects a preferred payment method (cash, credit card, electronic wallet).
	
	4. For cash payment:
	
	  a. If Employee:
	
	    i. Employee enters the cash amount received.
	
	  b. If Customer:
	
	  i. Customer hands over the cash amount.
	
	5. For credit card payment:
	
	  a. User provides credit card details.
	
	    b. System validates and authorizes the transaction.
	
	  6. For electronic wallet payment:
	
	    a. User selects the electronic wallet option.
	
	    b. User provides necessary details for the electronic wallet transaction.
	
	  7. The system processes the payment securely.

Alternate Flows	-

Use Case ID: UC-05

Feature	Values
Use Case ID	UC-05

Use Case Name	Generate Reports and Analytics
Description	Allows Authorized Managers to create detailed reports on financial performance, operations, and inventory. Customizable for management decisions. Reports can be submitted to higher-level managers and branch managers for review and further submission to the end restaurant manager.
Primary Actor	Higher Manager
Secondary Actors	The Manager is one degree lower. Start Form Department Manager (HR, Accountment, Reception, Kitchen, IT Support)
Preconditions	Relevant data is available, and the system is operational.
Postconditions	Reports are successfully generated and submitted through the hierarchical approval process.

Main Flow	1. The Authorized User as Manager selects "Generate Reports."
	
	2. The system displays a variety of report options.
	
	3. The Manager selects the desired report type.
	
	4. For advanced customization:
	
	  a. Manager customizes report parameters, such as date range, specific
	
	metrics, or filters.
	
	  b. Data Analyst (an employee) may assist in defining complex analytics criteria.
	
	5. The Manager submits the report for review to their Higher-Level Manager.
	
	6. Higher-level managers review the reports, consolidate insights, make decisions, and may add
	
	strategic recommendations.
	
	7. The report is submitted to the Higher-Level Manager for further review.
	
	8. End-management reviews and approves the final reports, making them accessible to all relevant
	
	stakeholders.

Alternate Flows	If the report is not approved at any level, the process is halted, and the Department Manager receives feedback for revisions.

Use Case ID: UC-06

Accounting Integration (UC-06A)

Feature	Value

Use Case ID	UC-06A
Use Case Name	Accounting Integration
Description	Integrates the system with the accounting system for financial data exchange.
Primary Actor	One Degree Higher Manager
Secondary Actors	One Degree Lower Manager Start from Accountment Department Manager (Include Finance Team Employees)
Preconditions	Integration interfaces are configured and operational.
Postconditions	Financial data is successfully exchanged with the accounting system.

Main Flow	1. The User Authorized as **One Degree Lower Manager** selects "Accounting Integration."
	
	2. System presents configuration options.
	
	3. User configures integration settings.
	
	   a. Defines connection parameters with the accounting system.
	
	   b. Specifies synchronization preferences.
	
	   c. Sets up authentication and authorization details.
	
	4. System establishes connections with the accounting system.
	
	5. Financial data synchronization occurs.
	
	6. System confirms successful data exchange.

Alternate Flows	Accountment Department Manager and Finance Team may be consulted during configuration or for review of synchronized financial data.

Inventory Management Integration (UC-06B)

Feature	Value
Use Case ID	**UC-06B**
Use Case Name	Inventory Management Integration
Description	Integrates the system with the inventory management system for product and stock data exchange.
Primary Actor	One Degree Higher Manager

Secondary Actors	One Degree Lower Manager Start from Inventory Department Manager (Include Inventory Team Employees)
Preconditions	Integration interfaces are configured and operational.
Postconditions	Product and stock data is successfully exchanged with the inventory management system.

Main Flow	1. The User Authorized as One Degree Lower Manager selects "Inventory Management Integration."
	
	2. System presents configuration options.
	
	3. User configures integration settings.
	
	   a. Defines connection parameters with the inventory management system.
	
	   b. Specify synchronization preferences.
	
	   c. Set up authentication and authorization details.
	
	4. The system establishes connections with the inventory management
	
	5. Material and Food data synchronization occurs.
	
	6. System confirms successful data exchange.
	
	The Inventory Department Manager and Inventory Team may be consulted during configuration or to review synchronized product and stock data.

Alternate Flows	Inventory Department Manager and Inventory Team may be consulted during configuration or for review of synchronized product and stock data.

Use Case ID: UC-07

Feature	Values
Use Case ID	UC-07
Use Case Name	Employee Scheduling
Description	Facilitates the creation and management of employee schedules, taking into account shifts and roles within the organization. This use case empowers HR managers, supervisors, and managers at each level to efficiently organize work schedules.
Primary Actor	HR Managers (at one higher level)
Secondary Actors	Supervisors, Managers (at one lower each level).

Preconditions	The system is running, and authorized personnel have access to the scheduling functionality.
Postconditions	Employee schedules are successfully created, edited, or deleted, and the changes are saved in the system.
Main Flow	1. Authorized personnel (HR managers, supervisors, and managers at each level) initiate the scheduling process by selecting "Manage Schedules" in the system interface. 2. The system presents various schedule options, allowing authorized personnel to choose actions such as creating a new schedule, editing an existing one, or deleting a schedule. 3. Authorized personnel select the desired option based on their scheduling needs. 4. Authorized personnel provide necessary information for the selected action, including specifying shifts, roles, and any relevant details for the schedule. 5. The system saves the schedule changes, ensuring that the updated schedule reflects the latest information and adjustments.
Alternate Flows	-

Use Case ID: UC-08

Feature	Values
Use Case ID	UC-08
Use Case Name	Customer Feedback Management
Description	Facilitates the gathering and management of customer feedback to enhance services and overall customer satisfaction. This use case empowers employees to systematically collect and analyze customer input.
Primary Actor	HR Management
Secondary Actor	Customer Support team (Employees Belong to marketing department)
Preconditions	The system is running, and employees have access to the feedback management functionality.
Postconditions	Customer feedback is successfully recorded and accessible for analysis.
Main Flow	1. Employees initiate the feedback management process by selecting "Feedback Management" in the system interface.

	2. The system presents various options for collecting and analyzing feedback, offering choices such as surveys, comments, or ratings. 3. Employees select the specific option based on the type of feedback they intend to collect. 4. The system systematically records the received feedback, ensuring that it is stored securely and is accessible for further analysis and improvement initiatives.
Alternate Flows	-

Use Case ID: UC-09

Feature	Values
Use Case ID	UC-09
Use Case Name	Marketing Campaign Management
Description	Manages marketing campaigns and tracks engagement metrics. This use case empowers the Marketing Team to strategically plan, execute, and analyze the performance of various marketing initiatives.
Primary Actor	Marketing Team (Generalization even for Administration)
Preconditions	Marketing campaigns are set up
Postconditions	Marketing campaign metrics are updated.
Main Flow	1. The Marketing Team initiates the campaign management process by selecting "Marketing Campaign Management" in the system interface. 2. The system presents various marketing campaign options, offering choices such as creating a new campaign, monitoring ongoing campaigns, or analyzing past campaign performance. 3. The Marketing Team selects a specific option based on their campaign management needs. 4. The authorized user provides necessary information, such as campaign details, target audience, and desired outcomes. 5. The system systematically updates campaign metrics, including engagement rates, conversion rates, and other relevant performance indicators.

Alternate Flows	-

NOTES!

Engagement rates, conversion rates, and other relevant performance indicators are key metrics used to measure the effectiveness and success of marketing campaigns. Here's a brief explanation of each:

1. Engagement Rates:

 - Definition: Engagement rates measure the level of interaction and involvement that users have with a marketing campaign.

 - Calculation: It is often calculated as the number of interactions (such as clicks, likes, shares, comments) divided by the total number of impressions or reach.

2. Conversion Rates:

 - Definition: Conversion rates indicate the percentage of users who take a desired action (e.g., make a purchase, sign up for a newsletter) out of the total number of users who were exposed to the campaign.

 - Calculation: It is calculated by dividing the number of conversions by the total number of visitors or interactions and multiplying by 100 to get a percentage.

Use Case ID: UC- 10

Feature	Values
Use Case ID	UC-10
Use Case Name	Customer Orders Invoice Management
Description	Tracks and manages restaurant inventory related to customers' orders efficiently. (to oversee and control)
Primary Actor	Accountment Department (Invoice Team)
Preconditions	Customer orders are received and processed.
Postconditions	Customer invoices are generated.

Main Flow	1. The Invoice Team accesses the "Customer Orders Invoice Management" feature in the system interface. 2. The team selects an option for managing customer orders and generating invoices. 3. The team provides the necessary information, such as customer details, ordered items, quantities, and any relevant updates or changes to the invoice. 4. The system updates inventory levels based on processed customer orders for accurate tracking. 5. The Invoice Team finalizes the process, and the system generates and stores customer invoices for distribution.
Alternate Flows	-

Use Case ID: UC-11

Feature	Values
Use Case ID	UC-11
Use Case Name	Supplier Management
Description	Manages relationships with suppliers for efficient procurement. This use case empowers the Procurement Team to effectively oversee and maintain supplier information, ensuring streamlined and reliable procurement processes.
Primary Actor	Procurement Team Employees in Inventory Department
Preconditions	Supplier information is set up.
Postconditions	Supplier details are successfully updated.
Main Flow	1. The Procurement Team initiates the supplier management process by selecting "Supplier Management" in the system interface. 2. The system presents various supplier options, offering choices such as adding a new supplier, editing an existing supplier, or deleting a supplier from the system. 3. The Procurement Team selects a specific option based on the supplier management needs. 4. The employee provides necessary information, such as supplier details, contact information, and any relevant updates or changes. 5. The system systematically updates the supplier details, ensuring accurate and up-to-date information for efficient procurement processes.

Alternate Flows	-

Use Case ID: UC-12

Feature	Values
Use Case ID	UC-12
Use Case Name	Table Management
Description	Allocates and manages tables in the restaurant. This use case empowers Front-of-House Staff to efficiently handle table allocations, enhancing the overall dining experience for customers.
Primary Actor	Front-of-House Staff
Preconditions	Tables are set up in the system.
Postconditions	Table allocations are successfully updated.
Main Flow	1. Front-of-House Staff initiates the table management process by selecting "Table Management" in the system interface. 2. The system presents various table options, offering choices such as allocating a table or deallocating a table. 3. Front-of-House Staff selects a specific option based on the table management needs. 4. The employee provides necessary information, such as the table number and whether to allocate or deallocate the table. 5. The system systematically updates the table allocations, ensuring accurate and real-time management of table availability.
Alternate Flows	-

Use Case ID: UC-13

Feature	Values
Use Case ID	UC-13
Use Case Name	Social Media Integration

Description	Integrates with social media platforms for marketing and customer engagement. This use case empowers the Marketing Team to seamlessly share marketing content on linked social media accounts.
Primary Actor	Marketing Team
Preconditions	Social media accounts are linked.
Postconditions	Marketing content is shared on social media.
Main Flow	1. Marketing team creates content. 2. Marketing team selects social media platforms. 3. System posts content on selected platforms.
Alternate Flows	-

Use Case ID: UC-14

Feature	Values
Use Case ID	UC-14
Use Case Name	Customer Notifications
Description	Sends notifications to customers about promotions and events. This use case enables the Marketing Team to effectively communicate promotions and events to the target customer base.
Primary Actor	Marketing Team
Preconditions	Notification system is set up.
Postconditions	Customers receive notifications.
Main Flow	1. Marketing team creates notification content. 2. Marketing team selects target customers. 3. System sends notifications to customers.
Alternate Flows	-

Use Case ID: UC-15

Feature	Values
Use Case ID	UC-15
Use Case Name	Customer Relationship Management (CRM)
Description	Manages customer relationships and preferences.
Primary Actor	Marketing Team
Preconditions	CRM system is set up.
Postconditions	Customer preferences are successfully updated.
Main Flow	1. Marketing team accesses CRM system. 2. Marketing team updates customer information. 3. System stores updated customer preferences.
Alternate Flows	-

Use Case ID: UC-16

Feature	Values
Use Case ID	UC-16
Use Case Name	Employee Training and Performance Tracking
Description	Tracks employee training and performance. This use case empowers the Human Resources team to manage training programs, update employee training attendance, and monitor performance.
Primary Actor	Human Resources
Preconditions	Training programs are defined.
Postconditions	Employee training and performance records are successfully updated.
Main Flow	1. HR team selects "Training and Performance." 2. HR team adds or updates training programs. 3. System records employee training attendance and performance.

Feature	Values
Alternate Flows	-

Use Case ID: UC-17

Feature	Values
Use Case ID	UC-17
Use Case Name	Employee Time and Attendance
Description	Records employee attendance and working hours. This use case enables the Human Resources team to manage employee attendance records efficiently.
Primary Actor	Human Resources
Preconditions	Time and attendance system is set up.
Postconditions	Employee attendance records are successfully updated.
Main Flow	1. HR team accesses time and attendance system. 2. HR team records employee attendance. 3. System updates attendance records.
Alternate Flows	-

Use Case ID: UC-18

Feature	Values
Use Case ID	UC-18
Use Case Name	Event Management
Description	Plans and manages events hosted by the restaurant. This use case is led by the events Coordinator, ensuring the successful execution of planned events.
Primary Actor	Events Coordinator Employee belong to Marketing department
Preconditions	Event details are defined.

Postconditions	Event is successfully executed.
Main Flow	1. Events coordinator creates event plan. 2. Events coordinator selects venue and resources. 3. System confirms event details.
Alternate Flows	-

Use Case ID: UC-19

Feature	Values
Use Case ID	UC-19
Use Case Name	Food Allergen Information
Description	Provides information about food allergens to customers. This use case enables customers to access allergen details for menu items.
Primary Actor	Customers
Preconditions	Allergen information is set up in the system (menu).
Postconditions	Customer receives allergen information.
Main Flow	1. Customer selects a menu item. 2. Customer requests allergen information. 3. System provides allergen details.
Alternate Flows	-

Use Case ID: UC-20

Feature	Values
Use Case ID	UC-20
Use Case Name	Waitlist Management
Description	Manages a waitlist for customers during peak hours.

	This use case empowers Front-of-House Staff to efficiently handle customer waitlists, estimate wait times, and update the waitlist status.
Primary Actor	Front-of-House Staff belong to Reception Department
Preconditions	Waitlist system is set up.
Postconditions	Waitlist is managed efficiently.
Main Flow	1. Staff adds customers to the waitlist. 2. Staff estimates wait times. 3. System updates the waitlist status.
Alternate Flows	-

Use Case ID: UC-21

Feature	Values
Use Case ID	UC-21
Use Case Name	Waitstaff Performance Tracking
Description	Tracks and evaluates waitstaff performance. This use case empowers the Front-of-House Manager to assess and record waitstaff performance for ongoing improvement. (included in report)
Primary Actor	Front-of-House Manager
Preconditions	Performance tracking system is set up.
Postconditions	Waitstaff performance records are successfully updated.
Main Flow	1. Manager accesses performance tracking system. 2. Manager evaluates waitstaff performance. 3. System updates performance records.
Alternate Flows	-

Use Case ID: UC-22

Feature	Values
Use Case ID	UC-22
Use Case Name	Customer Surveys
Description	Collects feedback from customers through surveys. This use case enables the Marketing Team to create and analyze surveys, gathering valuable insights from customers.
Primary Actor	Marketing Team
Preconditions	Survey system is set up.
Postconditions	Survey responses are collected and analyzed.
Main Flow	1. Marketing team creates survey questions. 2. Marketing team selects target audience. 3. System sends surveys to customers. 4. System collects and analyzes survey responses.
Alternate Flows	-

Use Case ID: UC-23

Feature	Values
Use Case ID	UC-23
Use Case Name	Gift Card Management
Description	Manages gift card programs for customers. This use case allows the Customer Support Team to oversee gift card programs, ensuring accurate record-keeping and transactions.
Primary Actor	Customer Support team (Employees Belong to marketing department)
Preconditions	Gift card system is set up.
Postconditions	Gift card records are successfully updated.
Main Flow	1. Customer Support team accesses gift card management.

	2. Customer Support team adds or updates gift card programs. 3. System records gift card transactions.
Alternate Flows	-

Use Case ID: UC-24

Feature	Values
Use Case ID	UC-24
Use Case Name	Discounts and Promotions
Description	Applies discounts and promotions to orders. This use case allows the Marking and Accountment Team to configure and apply discounts, enhancing the customer ordering experience.
Primary Actor	Marking Team, Accountment Team
Preconditions	Discount and promotion rules are defined.
Postconditions	Discounts are applied to eligible orders.
Main Flow	1. Employee selects "Apply Discounts." 2. Employee configures discount rules. 3. System applies discounts to eligible orders.
Alternate Flows	-

Use Case ID: UC-25

Feature	Values
Use Case ID	UC-25
Use Case Name	Food Delivery Integration
Description	Coordinates the delivery of orders to specific locations by human employees.

	This use case involves configuring integration settings for seamless communication with delivery service APIs, ensuring accurate and timely delivery to the designated addresses
Primary Actor	Delivery Coordinator belong to Delivery Department
Secondary Actor	Delivery employee
Preconditions	Delivery service APIs are integrated.
Postconditions	Orders are successfully sent to delivery services.
Main Flow	1. The Delivery Coordinator configures delivery service integration. 2. The system communicates with delivery service APIs. 3. Orders are received by the system and assigned to human delivery employees based on their location and delivery expertise. 4. Human delivery employees receive order details and delivery instructions. 5. Human delivery employees deliver the orders to the specific locations. 6. The system updates the status of the orders to reflect successful delivery.
Alternate Flows	-

Use Case ID: UC-26

Feature	Values
Use Case ID	UC-26
Use Case Name	Takeout Order Management
Description	Manages takeout orders efficiently. This use case empowers Employees to process and prepare takeout orders, ensuring smooth operations for customers.
Primary Actor	Customer
Secondary Actor	Employees
Preconditions	Takeout order system is set up.
Postconditions	Takeout orders are processed and ready for pickup.
Main Flow	1. Customer selects "Takeout Orders."

	2. System displays takeout orders. 3. Employee processes and prepares takeout orders. 4. System updates order status.
Alternate Flows	-

Use Case ID: UC-27

Feature	Values
Use Case ID	UC-27
Use Case Name	System Backup and Recovery
Description	Implements a backup and recovery system for data to ensure recoverability in case of system failure.
Primary Actor	IT Administrator
Preconditions	Backup and recovery procedures are defined.
Postconditions	Data is recoverable in case of system failure.
Main Flow	1. IT administrator configures backup settings. 2. System performs regular backups. 3. In case of system failure, data is recovered from backups.
Alternate Flows	-

Use Case ID: UC-28

Feature	Values
Use Case ID	UC-24
Use Case Name	User Authentication
Description	Authenticates users for secure access to the system by verifying credentials.
Primary Actor	IT Administrator
Preconditions	User accounts are created.

Postconditions	Users are successfully authenticated.
Main Flow	1. User enters username and password. 2. System verifies the credentials. 3. User gains access if credentials are valid.
Alternate Flows	1a. Invalid credentials lead to denial of access.

Use Case ID: UC-29

Feature	Values
Use Case ID	UC-29
Use Case Name	User Authorization
Description	Authorizes users based on their roles and permissions, allowing or denying access accordingly.
Primary Actor	IT Administrator
Preconditions	User accounts are created.
Postconditions	Users are granted access based on their roles and permissions.
Main Flow	1. User requests system functionality. 2. System checks user permissions. 3. System allows or denies access based on permissions.
Alternate Flows	1a. User lacks required permissions and is denied access.

Use Case ID: UC-30

Feature	Values
Use Case ID	UC-30
Use Case Name	Account Creation
Description	Allows the creation of user accounts by providing necessary information.
Primary Actor	System

Preconditions	User account information is provided.
Postconditions	User account is created and ready for use.
Main Flow	1. User selects "Create Account." 2. User prompts for necessary user information. 3. User provides user information. 4. System creates the user account.
Alternate Flows	3a. If account creation information is incomplete, system prompts for required details.

Use Case ID: UC-31

Feature	Values
Use Case ID	UC-31
Use Case Name	Account Deactivation
Description	Deactivates user accounts when needed.
Primary Actor	IT Administrator
Preconditions	User accounts exist.
Postconditions	User account is deactivated.
Main Flow	1. IT administrator selects "Deactivate Account." 2. System displays a list of active user accounts. 3. IT administrator selects the account to deactivate. 4. System deactivates the user account.
Alternate Flows	If the system encounters an error while deactivating the account, it notifies the IT administrator and logs the issue for further investigation.

Use Case ID: UC-32

Feature	Values
Use Case ID	UC-32

Use Case Name	System Shutdown
Description	Initiates a controlled shutdown of the restaurant management system.
Primary Actor	IT Administrator
Preconditions	No critical operations are in progress.
Postconditions	System is safely shut down.
Main Flow	1. IT administrator selects "Shutdown System." 2. System displays a confirmation message. 3. IT administrator confirms the shutdown. 4. System initiates a controlled shutdown.
Alternate Flows	If there are critical operations in progress, the system notifies the IT administrator and prevents the shutdown until those operations are completed or aborted.

Use Case Table: Manage Own Account (UC-33A, UC-33B, UC-33C, UC-33D)

UC-33: User Manage Own Account

Feature	Values
Use Case ID	UC-33
Use Case Name	User Manage Own Account
Description	Allows users to manage their account settings, change passwords, and update personal information.
Primary Actor	User
Preconditions	User is logged in.
Postconditions	User account settings are updated.
Main Flow	1. User selects "Account Settings." 2. System displays options to update settings. 3. User updates account information. 4. User changes the password if desired. 5. System saves the changes.
Alternate Flows	-

UC-34: Report Fake Content

Feature	Values
Use Case ID	UC-34
Use Case Name	Report Fake Content
Description	Allows users to report fake or inappropriate content within the system for review and action.
Primary Actor	All Users
Preconditions	User identifies fake or inappropriate content.
Postconditions	Report is submitted for review.
Main Flow	1. User selects "Report Content."
	2. System prompts user to specify the issue.
	3. User provides details about the reported content.
	4. System logs the report for review.
Alternate Flows	-

3. Specific Requirements

In the realm of **non-functional requirements**, **two critical aspects** for the restaurant management system are **data security** and **scalability**.

The need for a robust security system is evident, aiming to **protect** sensitive data through the implementation of encryption protocols, access controls, and vigilant intrusion detection systems.

The focus here is on fortifying the system's defenses, actively monitoring, and responding to any unauthorized access attempts.

In cases of challenges or **system failures** during the security implementation process, failover mechanisms and detailed error messages with guidance ensure continuous protection.

Simultaneously, the system's **scalability** is crucial to adapting to future restaurant needs and accommodating increased business volume.

The IT Administrator plays a central role in this aspect, engaging in meticulous **monitoring** of key performance indicators such as server load, response times, and resource utilization.

If scalability **improvements** are identified, adjustments are made through the system configuration interface, encompassing server capacities, load balancing parameters, and database optimization.

These alterations empower the system to seamlessly scale resources, ensuring optimal performance and responsiveness in the face of heightened operational demands.

The IT Administrator's adept navigation of these intricacies guarantees the system's adaptability and efficiency.

In the realm of **system management**, the responsibilities of the IT Administrator are exemplified in two essential features. Firstly, in **Customer Privacy Management**, the IT Administrator ensures the safeguarding of customer data privacy by configuring pertinent privacy settings and enforcing established policies. This entails a meticulous process where the IT administrator configures the privacy settings, prompting the system to rigorously enforce privacy policies. Consequently, customer data is treated in adherence to stringent privacy regulations, ensuring the preservation of confidentiality and compliance.

The second pivotal feature, **System Maintenance**, and Updates, underscores the role of the IT Administrator in orchestrating seamless system maintenance and updates. The IT administrator,

acting as the primary actor, initiates this process by scheduling maintenance, and meticulously planning the system's upkeep. Users are duly informed about upcoming maintenance through system notifications. As the maintenance schedule unfolds, the system undergoes necessary updates and maintenance, adhering to the predefined schedule. This systematic approach, led by the IT Administrator, guarantees the optimal performance and continued reliability of the entire system.
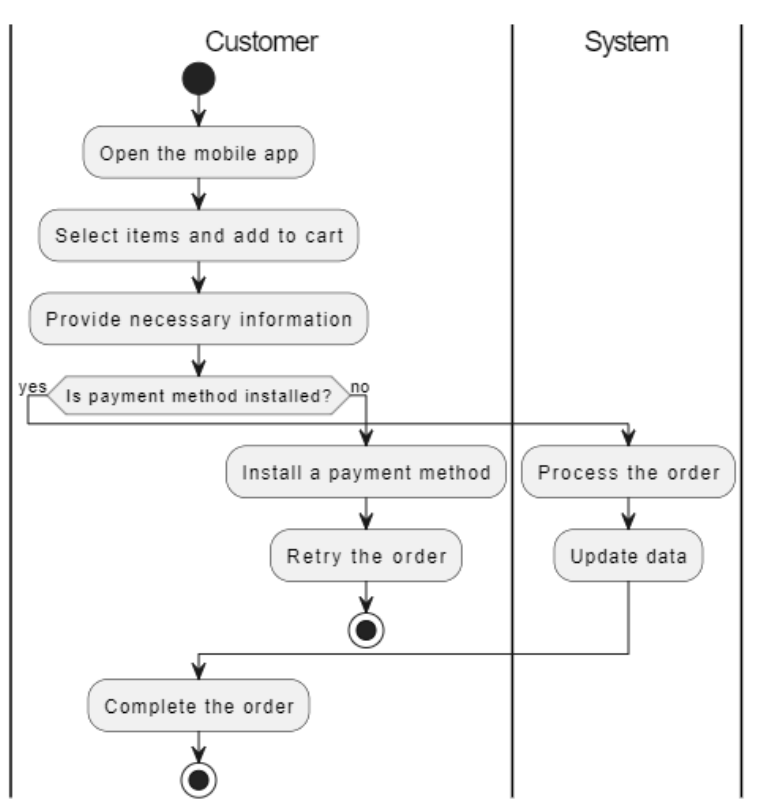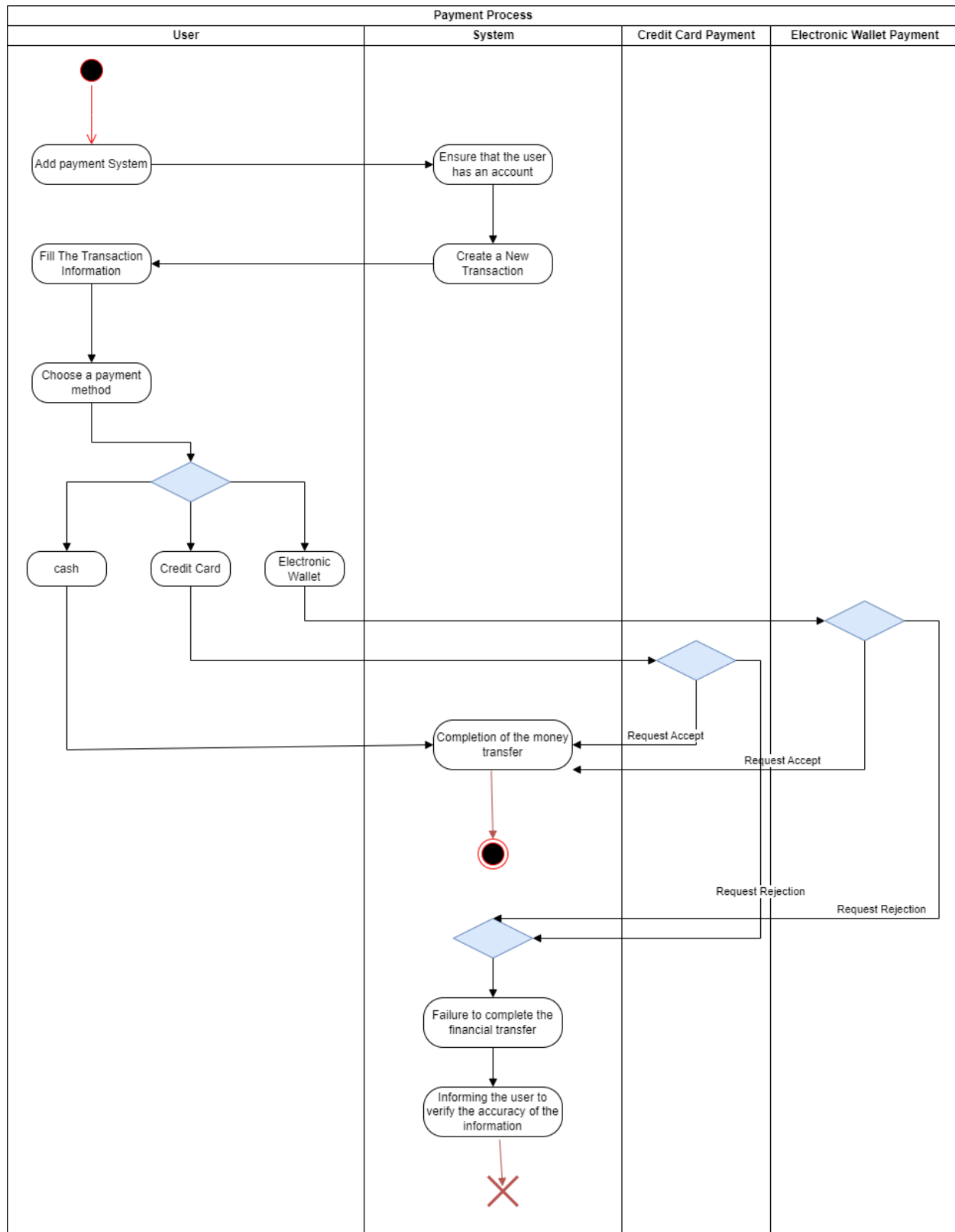
5.3. Class Diagram
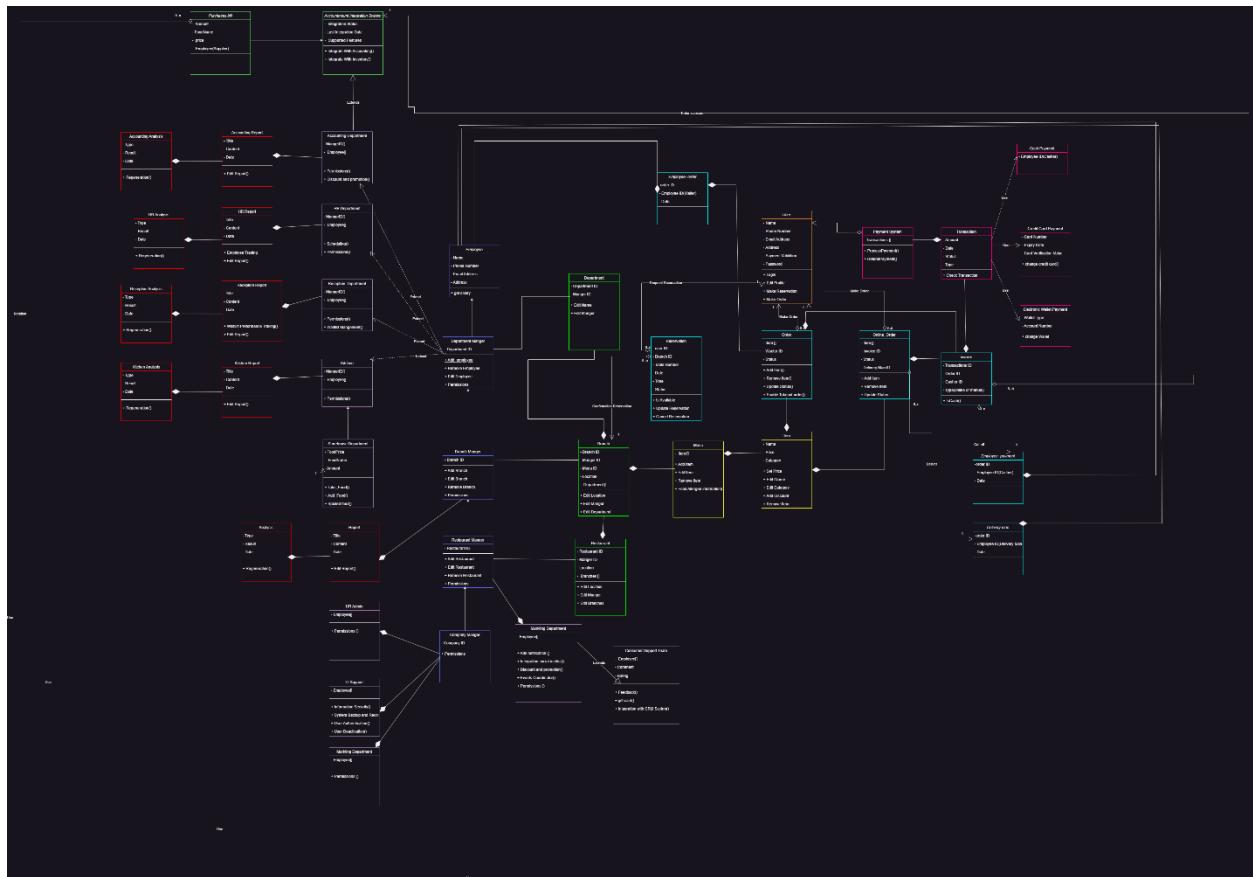
5.4. Activity Diagram Menu management
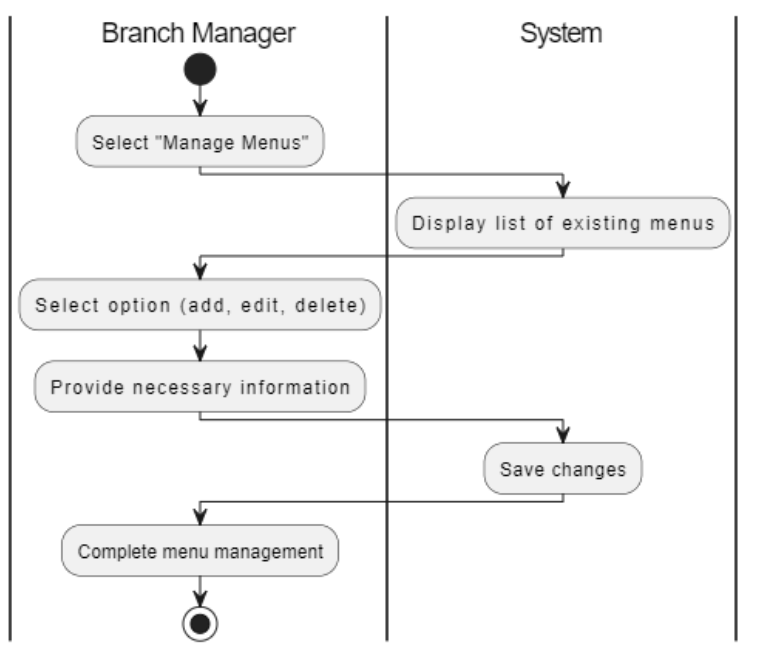
5.4. Activity Diagram Online Ordering

5.4. Activity Diagram Payment

5.4. Activity Diagram Report System

Department Manager | System | Data Analyst | Higher-Level Manager | Higher-Level Manager's Manager | End-Management

Select "Generate Reports"

Display report options

Select report type

Advanced customization needed? — no / yes

Customize report parameters

Assist in defining complex criteria

Submit report for review

Review reports

Reports approved? — yes / no

Consolidate insights

Add strategic recommendations

Provide feedback for revisions

Review and approve

Review and approve final reports

Make accessible to stakeholders

Receive feedback for revisions

5.5. Sequence Diagram - Online Order

5.5. Sequence Diagram – Online Reservation
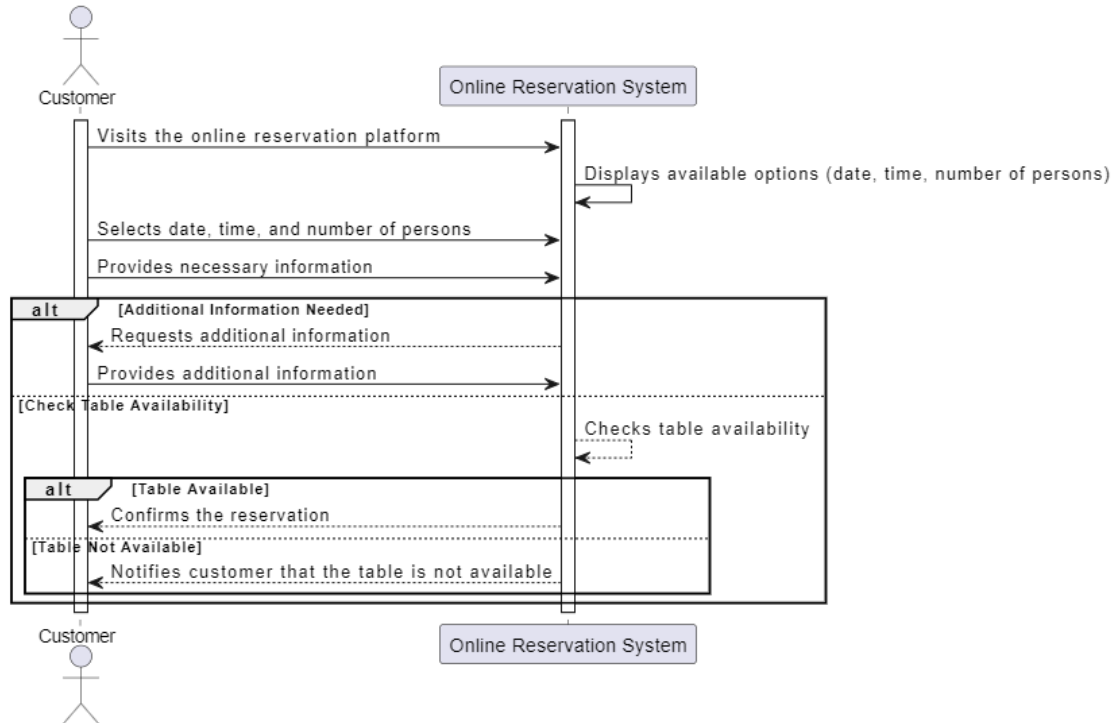
5.5. Sequence Diagram – Delivery
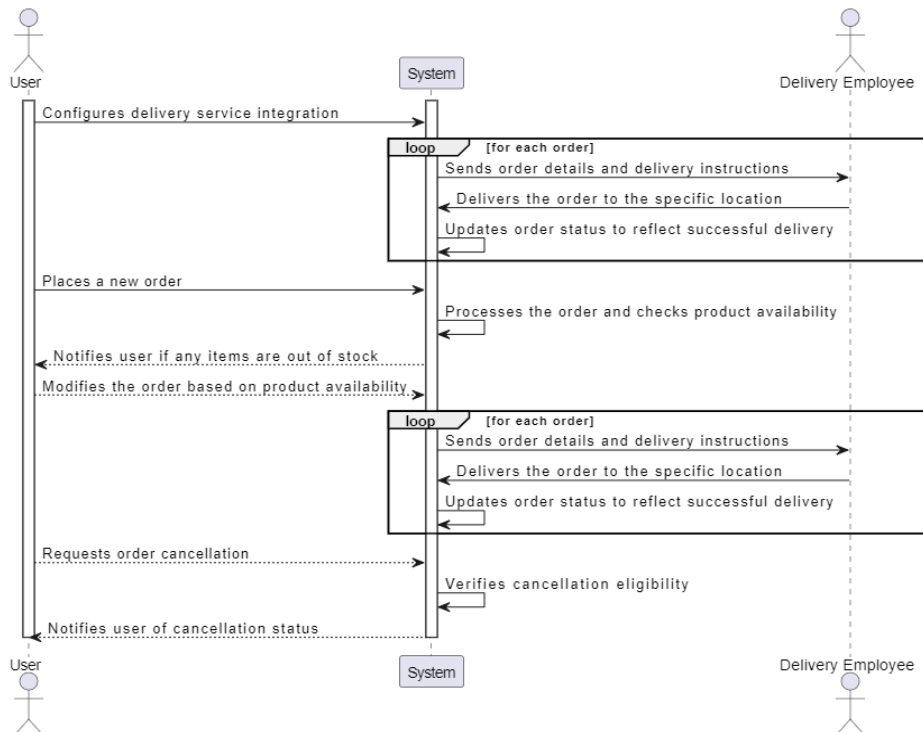
5.5. Sequence Diagram - Marketing
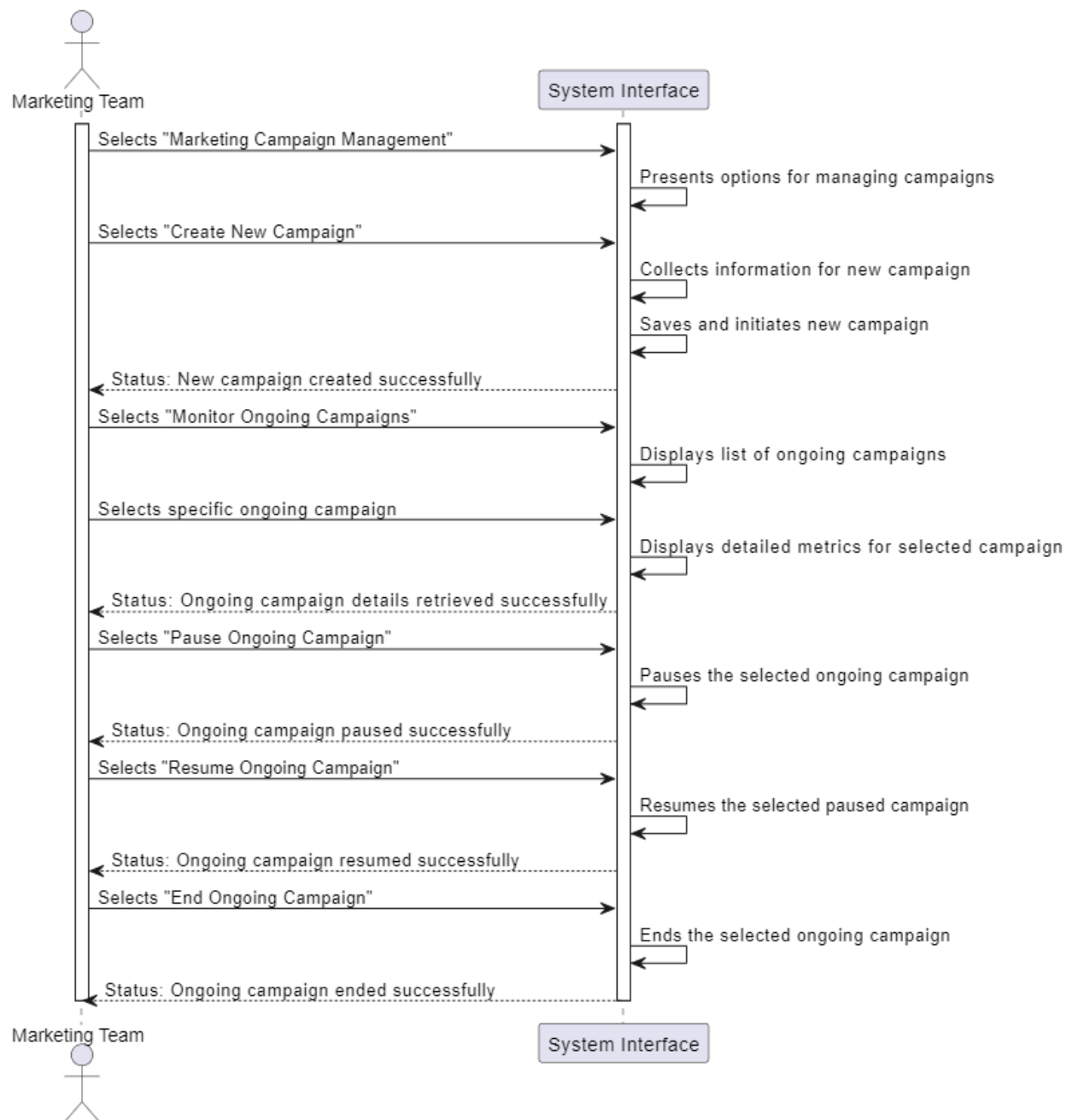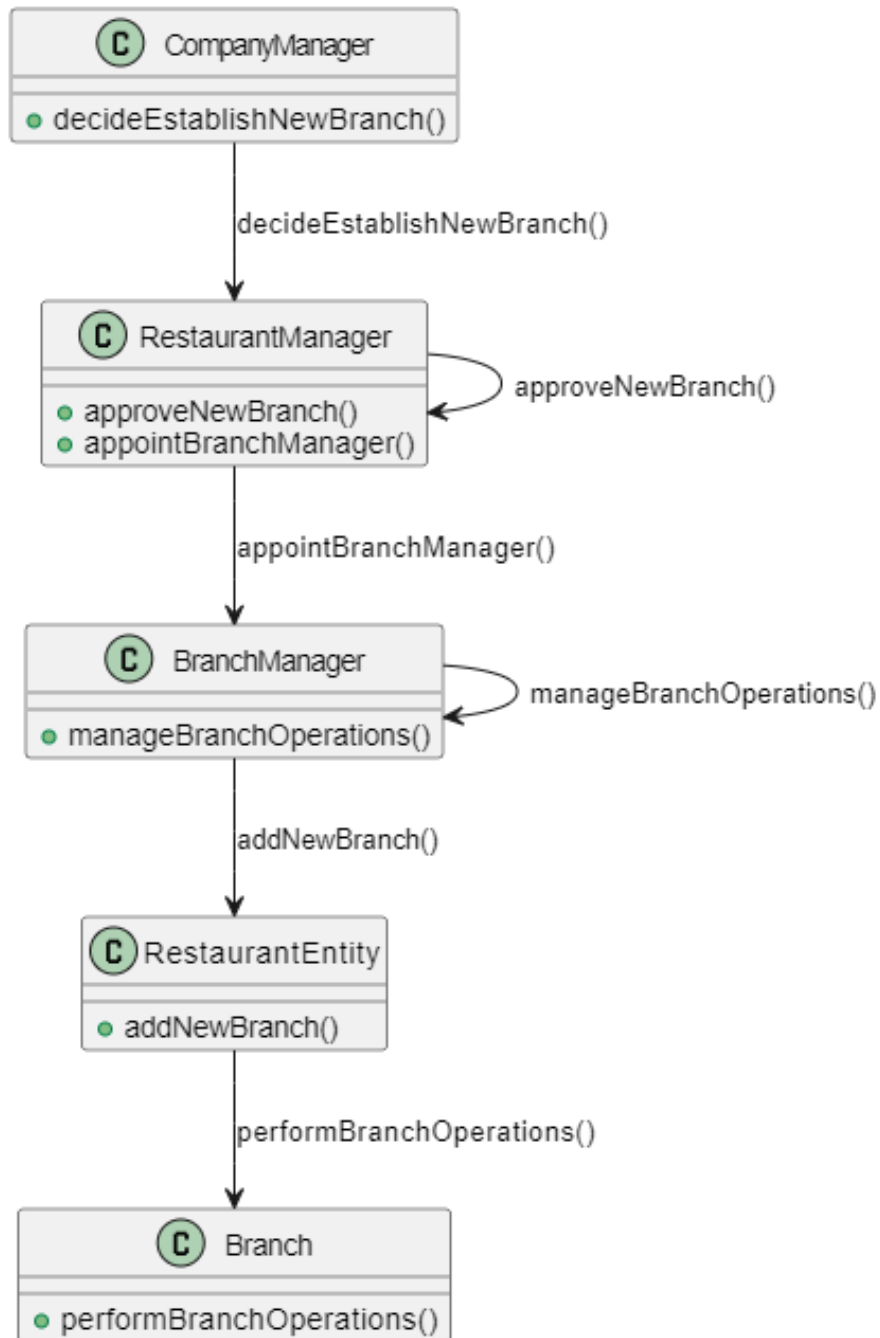
5.6. Data Flow Diagram – Online Oreder
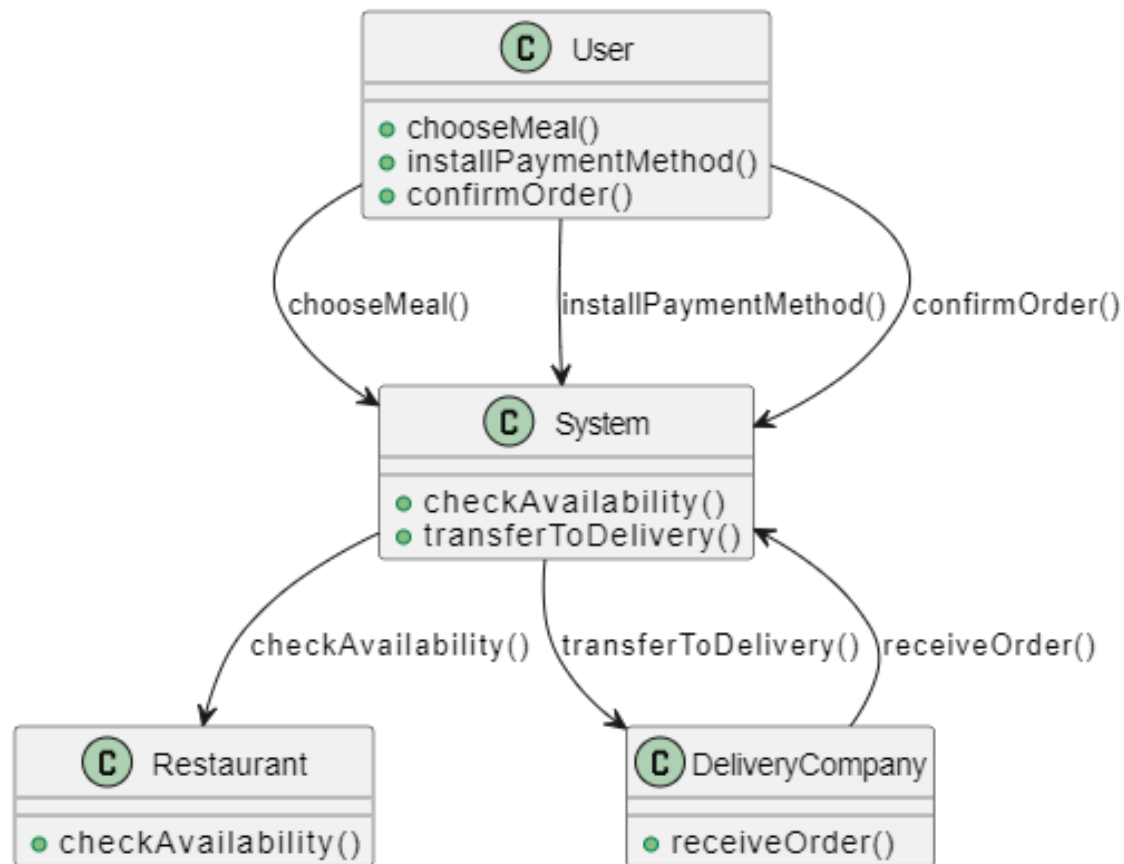
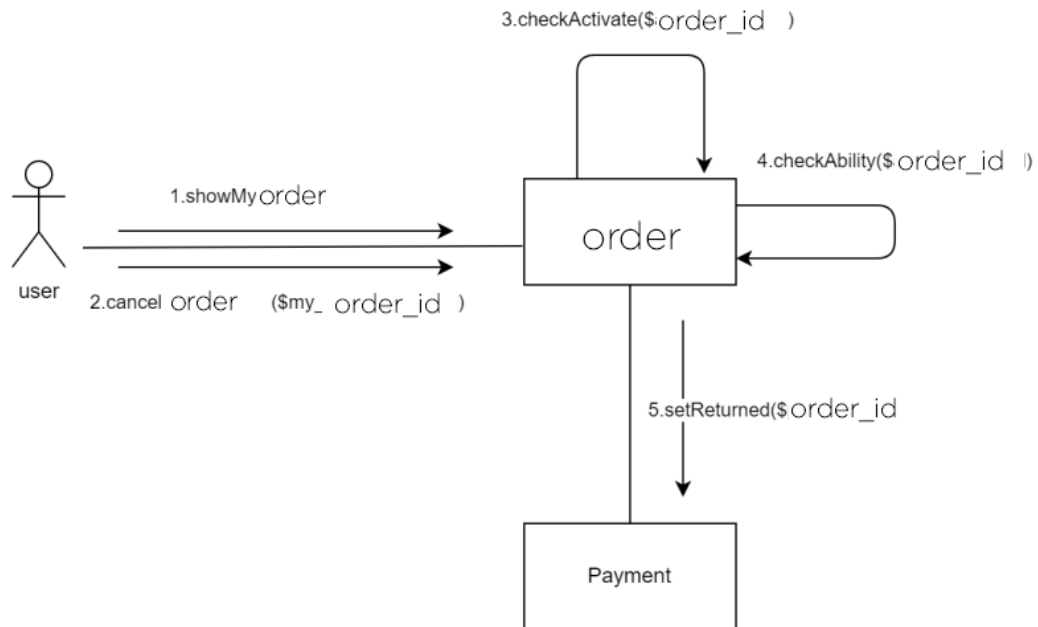## 5.6. Data Flow Diagram – Invoice Entered
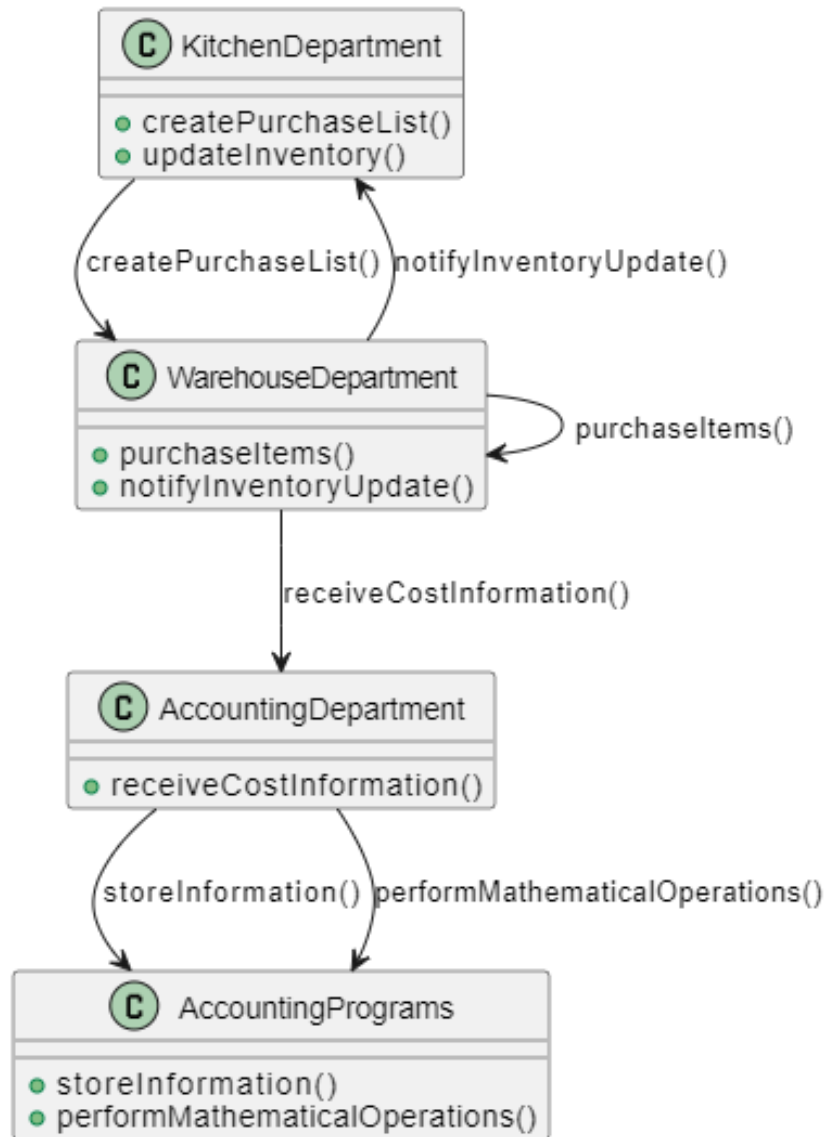
5.6. Data Flow Diagram – Add New Branch
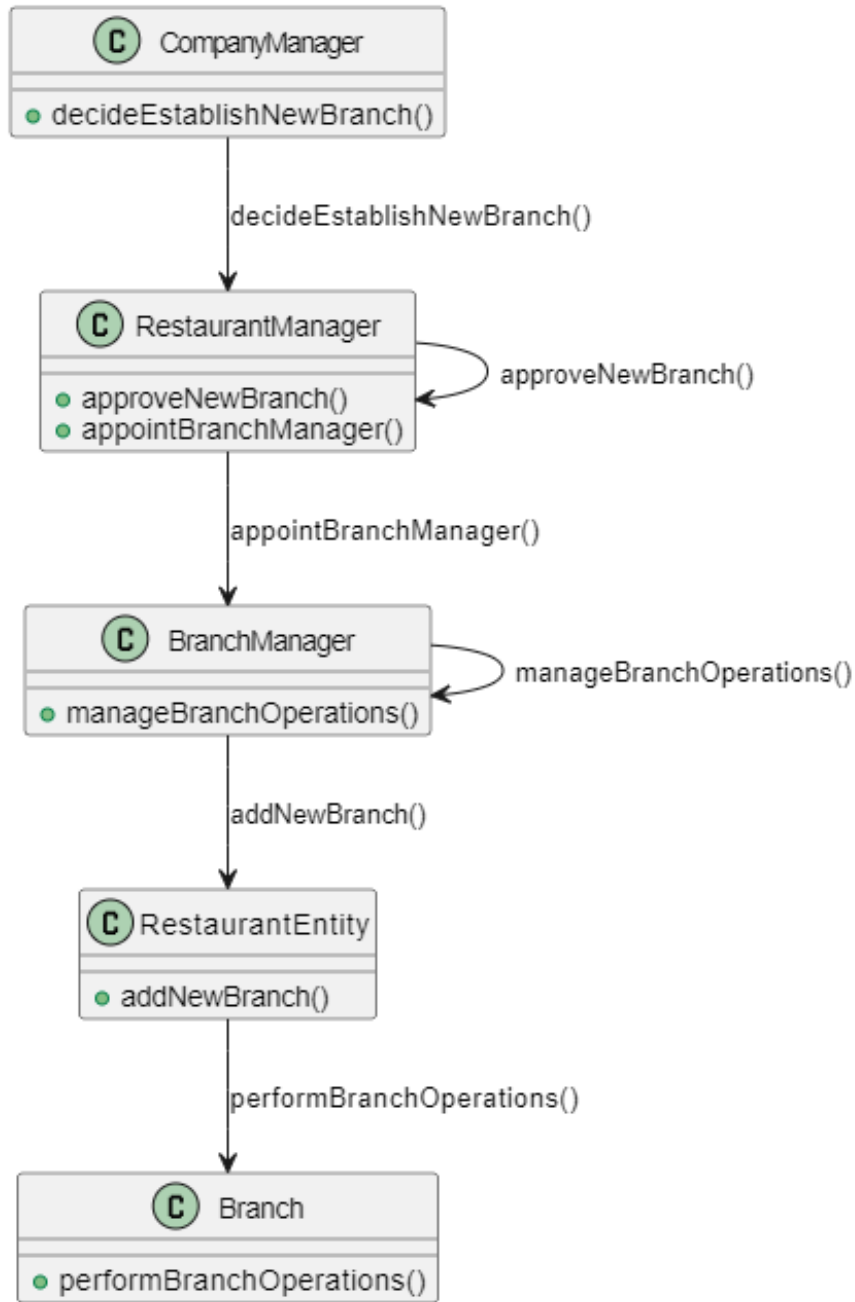
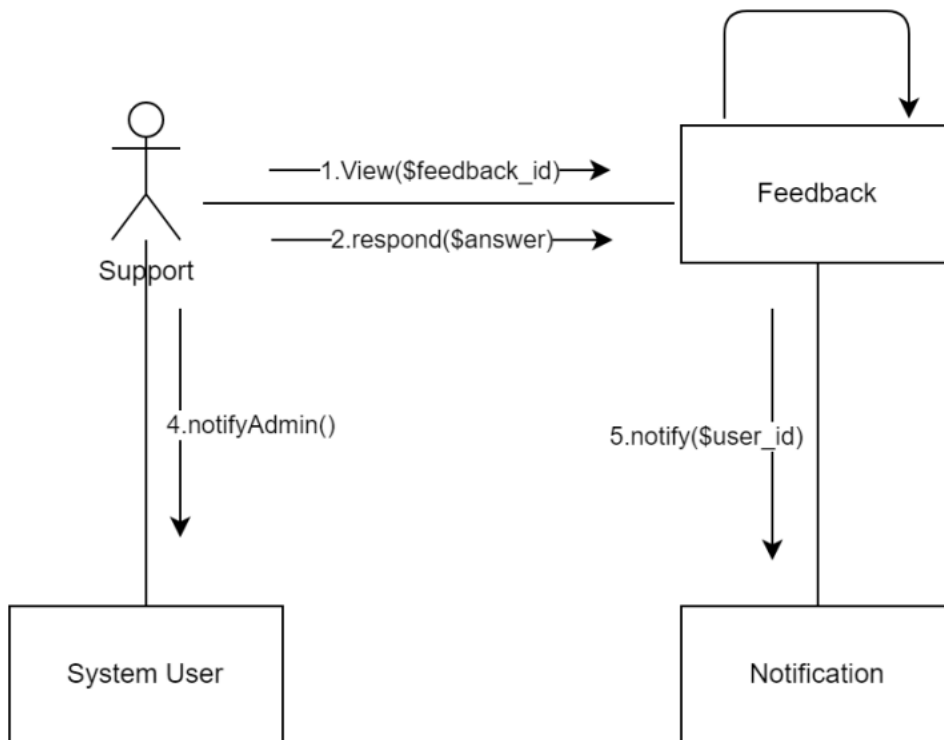## 5.6. Data Flow Diagram – Marketing

5.7. Collaboration Diagram – Cancel Order
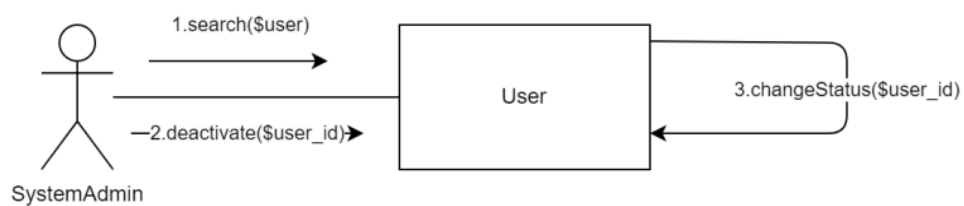
3.checkActivate($order_id)

1.showMyorder

4.checkAbility($order_id)

user

2.cancel order ($my_order_id)

order

5.setReturned($order_id

Payment

5.6. Collaboration Diagram – Feedback

1.View($feedback_id)

2.respond($answer)

Support

Feedback

4.notifyAdmin()

5.notify($user_id)

System User

Notification

5.6. Collaboration Diagram – Definition of a payment method

Order System

5.2:[authorized success] payment success

5.1:[authorized fail] payment fail

payment system

Customer

4.2: [authorized success] payment success

1: makePayment()
2: setPaymentInfo(payment_data)

3: authorized()

4.1: [authorized fail] payment fail

: Credit Card
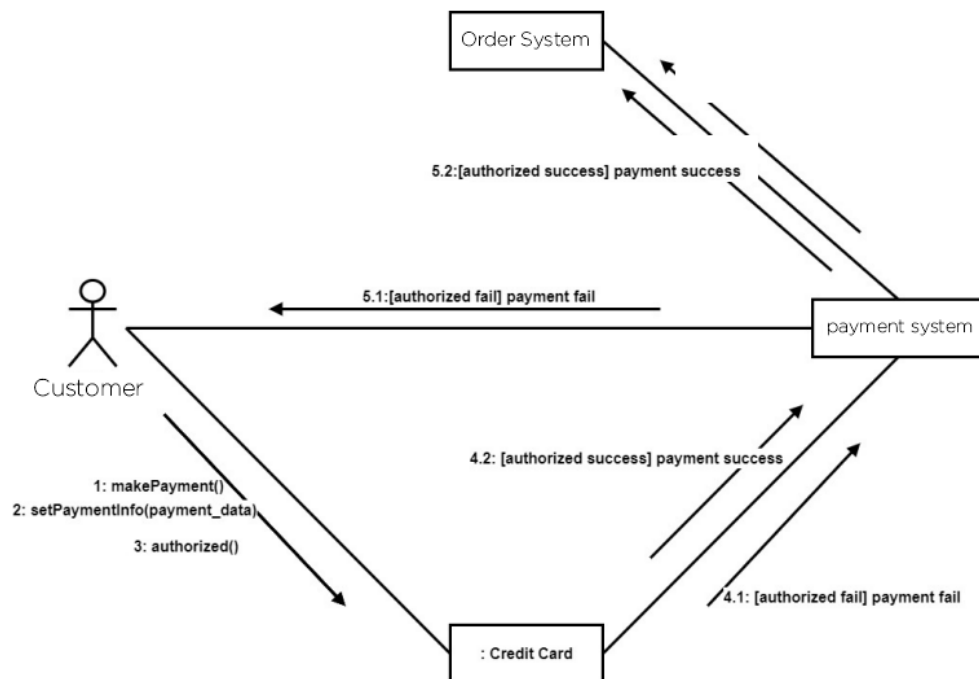
5.7. Collaboration Diagram - Deactivate a user

1.search($user)

User

3.changeStatus($user_id)
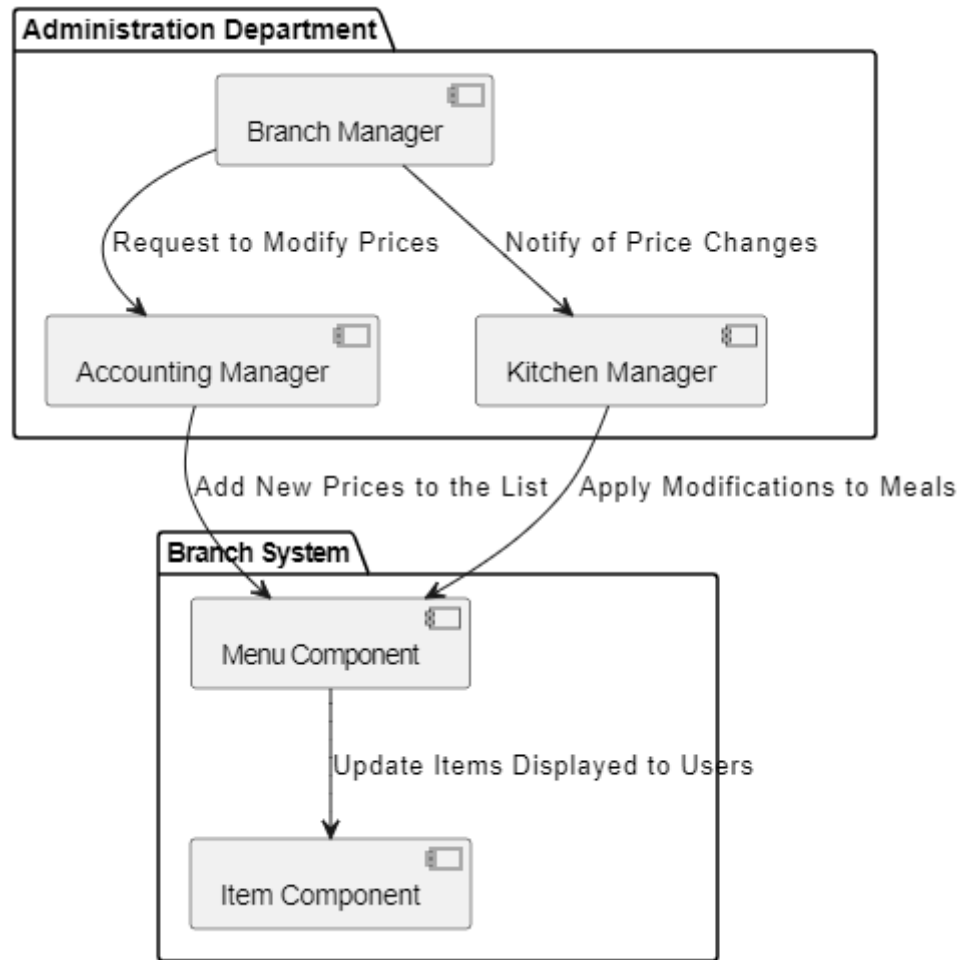
—2.deactivate($user_id)→

SystemAdmin

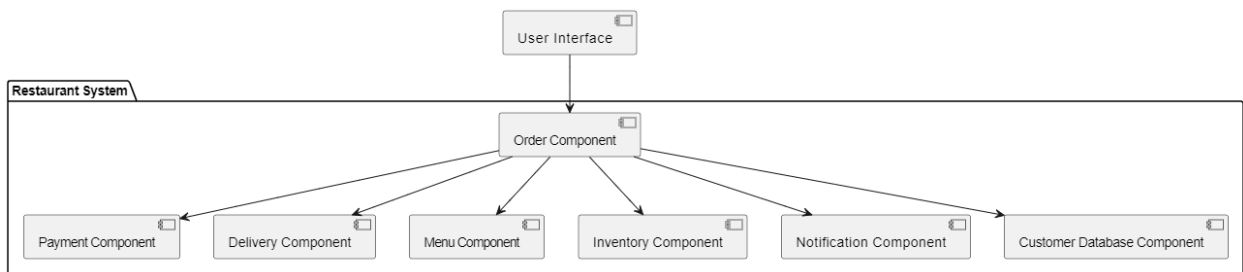## 5.8. Component Diagram – Approval of a new advertisement
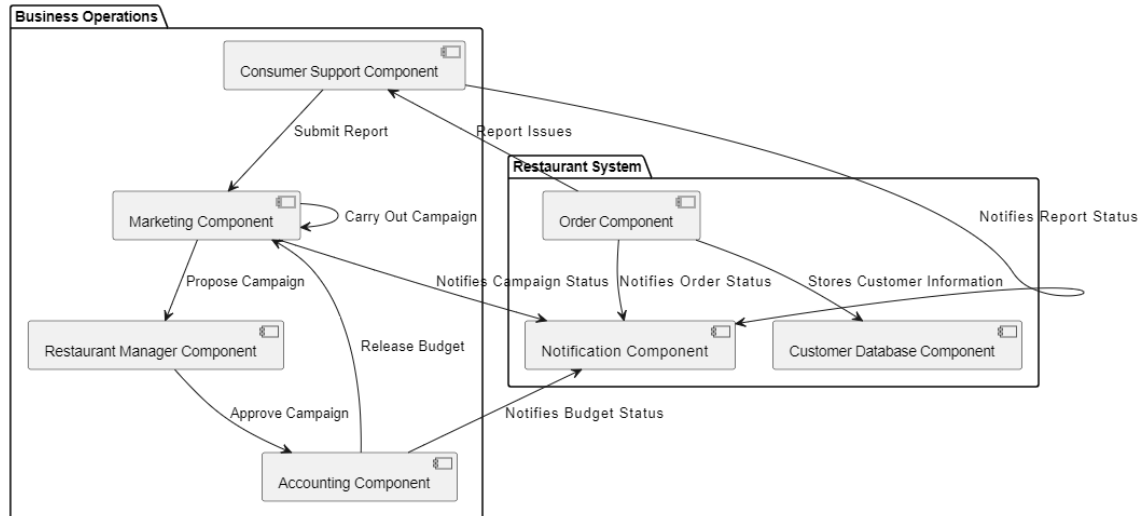
5.8. Component Diagram – Cancel order Components
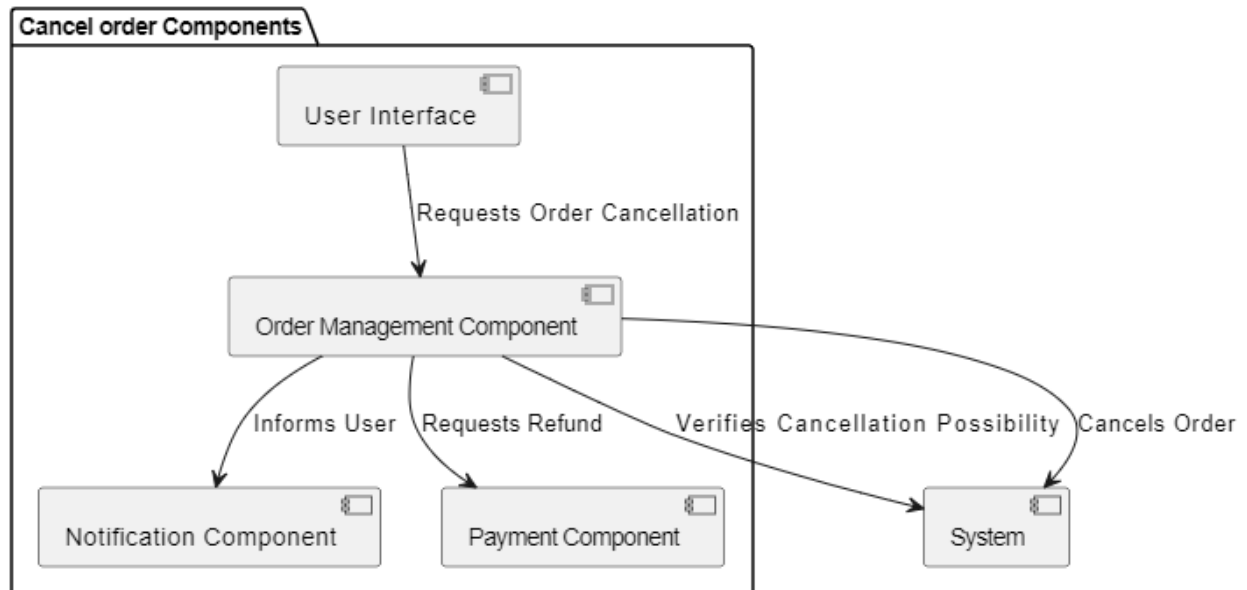
5.8. Component Diagram – Edit the price of items

5.8. Component Diagram - Online order

5.9. Deployment Diagram