

Arab Academy for Science,  
Technology & Maritime  
Transport

Faculty of Computers and Information Technology

**Introduction To Software Engineering**

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**Arab Academy**  
For Science, Technology and Maritime Transport

## On Cloud Nine

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# 1. Project Scope

On Cloud Nine is a campus meal ordering and delivery system that works exclusively with integrated college portals, ensuring a seamless and secure experience for students by automating access and simplifying food services.

## 2. Problem Definition

Before On Cloud Nine, students faced several issues with campus meal services, including inefficiencies, high costs, and inconvenience. Below are the key challenges:

### 1. Space limitations

- Limited seating causes congestion and a noisy environment.
- Students often must stand or find alternative spots to eat, impacting their comfort.

### 2. Order Delays & scheduling

- Long waiting times cause students to miss classes or rush their meals.
- Existing services do not provide enough scheduling options, leading to last-minute orders.

### 3. Smart Order Recommendations

- Students struggle to choose meals efficiently.

### 4. High Prices & Limited Offers

- Meal costs can be expensive, especially for students on tight budgets.
- Discounts and offers are rarely available.

## **5. Payment Method Constraints**

- The on-campus cafeteria requires cash.
- Students without cash in hand face longer waiting times or the inconvenience of finding ATMs.

## **6. Allergies Restrictions**

- Students with allergies find it exhausting to re-specify their needs each time.
- Menus often do not highlight allergen information clearly.

## **7. Lack of Feedback**

- Cafeterias do not systematically collect feedback to improve menu items or services.
- Students have no central platform to rate orders or share suggestions, reducing iterative service improvements.

# 3. Proposed Solution

On Cloud Nine solves key campus dining challenges with technology and user-friendly features. Below is an overview of the main problems, solutions, and features that enhance the dining experience.

## Key Problems, Solutions, and Features

### 1. Space Limitations

- **Problem:** Overcrowded on-campus dining areas affect student comfort.
- **Solution:** Use a pre-order system with scheduled pick-up times.

### 2. Order Delays & Scheduling

- **Problem:** Students often miss classes or face cancellation due to long waiting times.
- **Solution:** Advanced scheduling and real-time order tracking help ensure meals are ready at convenient times.

### 3. Smart Order Recommendations

- **Problem:** Students struggle to choose meals efficiently.
- **Solution:** A recommendation system that suggests based on the bestseller meals

### 4. High Prices & Limited Offers

- **Problem:** Prices are expensive.
- **Solution:** Offer tiered discounts (Attendance-based vouchers), alongside promotional deals to maintain competitive pricing.

## 5. Payment Method Constraints

- **Problem:** Limited to cash payments, causing inconvenience.
- **Solution:** Support digital payment methods (credit cards), including partial payments

## 6. Allergies Restrictions

- **Problem:** Students must repeatedly specify allergies, and it's easy to make mistakes.
- **Solution:** A user profile system that stores allergens preferences with automatic ingredient alerts and safe menu suggestions.

## 7. Lack of Feedback

- **Problem:** Collect feedback on student preferences.
- **Solution:** Provide in-app rating system.

## 4. Requirements

### 4.1 Functional Requirements

Below is a table of core functions, detailing how different users interact with the system.

ID	Function Name	Description	Actor
OCN01	Open from portal	Users can access the app through seamless integration with the college portal, but they must first log in through their portal.	User
OCN04	Set Allergy	The user fills in allergy information, which is then used to filter out unsafe menu items.	User
OCN02	Choose Category	Displays the Meals for the selected category	User
OCN12	Choose meal	Allows users to choose his meal	User
OCN16	Notify Alert	Automatically checks meal ingredients against the user's allergens profile and alerts the user if allergens/restrictions are violated.	System
OCN03	Customize Meal	Lets users add/remove ingredients based on dietary preferences stored in their profile.	User
OCN05	Add to Cart	Allow users to place one or more items in their virtual cart before finalizing.	User
OCN06	Checkout	Allows users to checkout his orders	User
OCN07	Schedule Order	Lets users select delivery/pickup times, set recurring orders, or pre-order for future dates.	User
OCN11	Redeem Voucher	Use this voucher to enjoy exclusive discounts or special offers. To redeem	User
OCN18	Check Attendance	Our system integrates with student attendance records, allowing us to automate discounts and coupons based on attendance.	System

OCN17	Choose Payment	Processes payments through multiple methods (in-app wallet, Instapay, card) and confirms purchase.	User
OCN08	Invalid	The system is able to check whether there's enough money or not	System
OCN	Place Order	Once confirmed, the order is processed, and the system generates a unique order ID for tracking.	User
OCN09	Track Order Status	Shows status to the order (completed, cancel and in progress)	User
OCN13	Provide Feedback	Let the users rate order	User
OCN	Cancel Order	Allows users to cancel their orders before they are prepared	User
OCN	ViewProfile	Enables users to view and manage their personal profile information	User
OCN10	View Orders Dashboard	Provides kitchen staff with a dashboard to view incoming orders..	Kitchen Staff
OCN	Update Order Status	Allows kitchen staff to update the status of an order in real-time.	Kitchen Staff
OCN14	CRUDMenu	Let Manger update menu items and prices.	Manager
OCN15	Manage Orders	Let Manager update on the order Status	Manager



## **4.2 Non-Functional Requirements**

### **1. Performance**

- The app seamlessly supports tens of thousands of concurrent users while maintaining a lightning-fast response at minimum time

### **2. Reliability**

- Designed for long-term stable operation with minimal downtime.

### **3. Security**

- encrypt user information during transfer and storage.

### **4. Usability**

- The app is designed for a smooth and intuitive experience, ensuring quick navigation, clear readability, and effortless interaction for all users.

### **5. Portability**

- The application will be available on iOS and Android platforms.

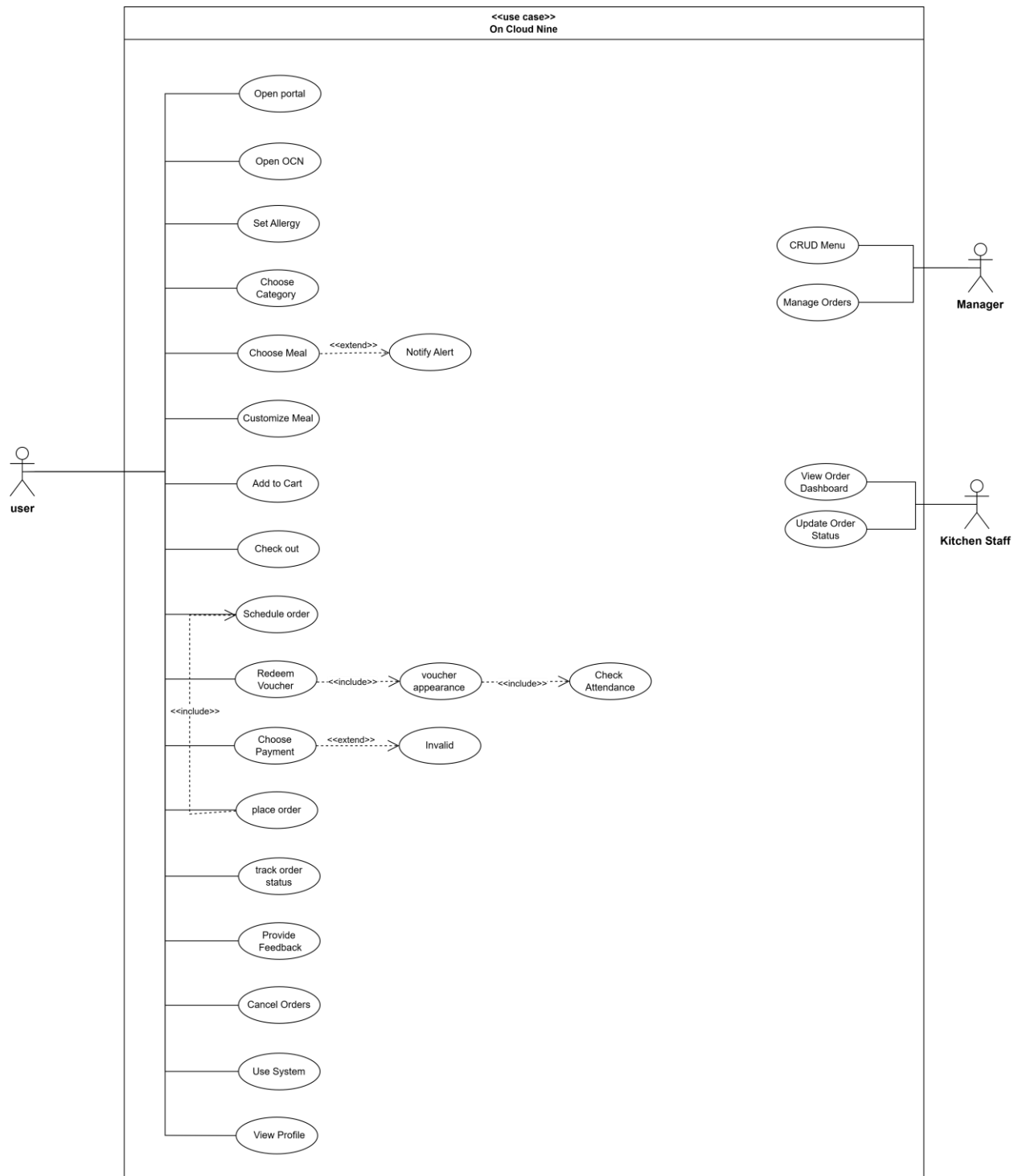
### **6. Maintainability**

- The project features clear documentation and a structured version control system to track revisions efficiently.

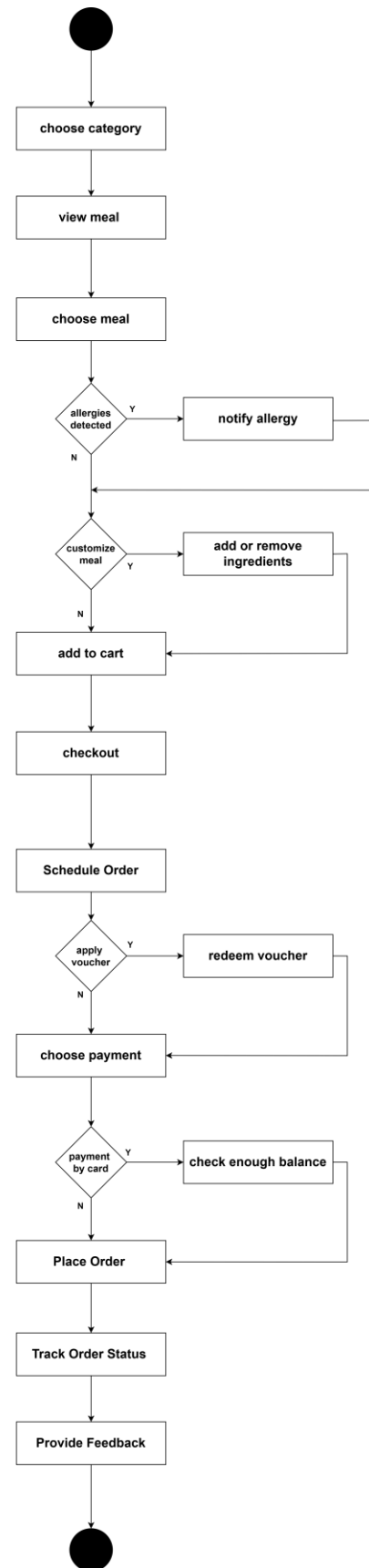
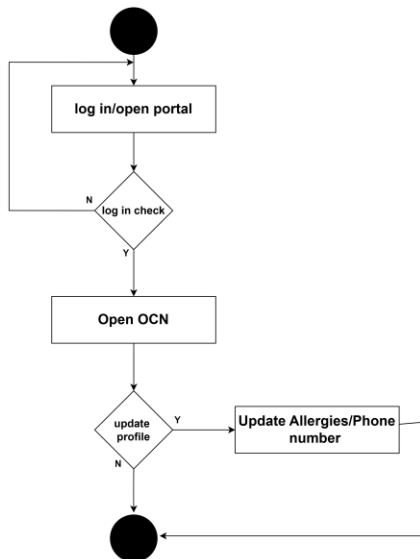
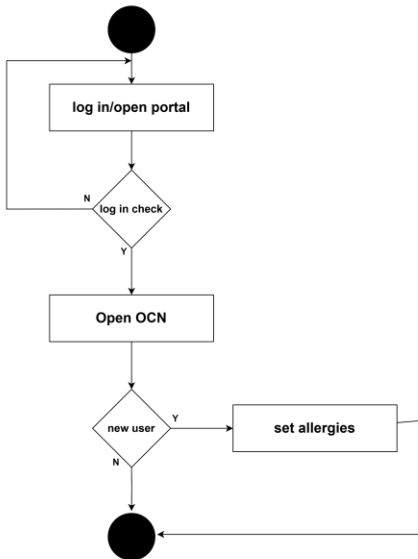
### **8. Compatibility**

- The app seamlessly integrates with external platforms, including payment systems and campus portals, through flexible and standardized APIs.

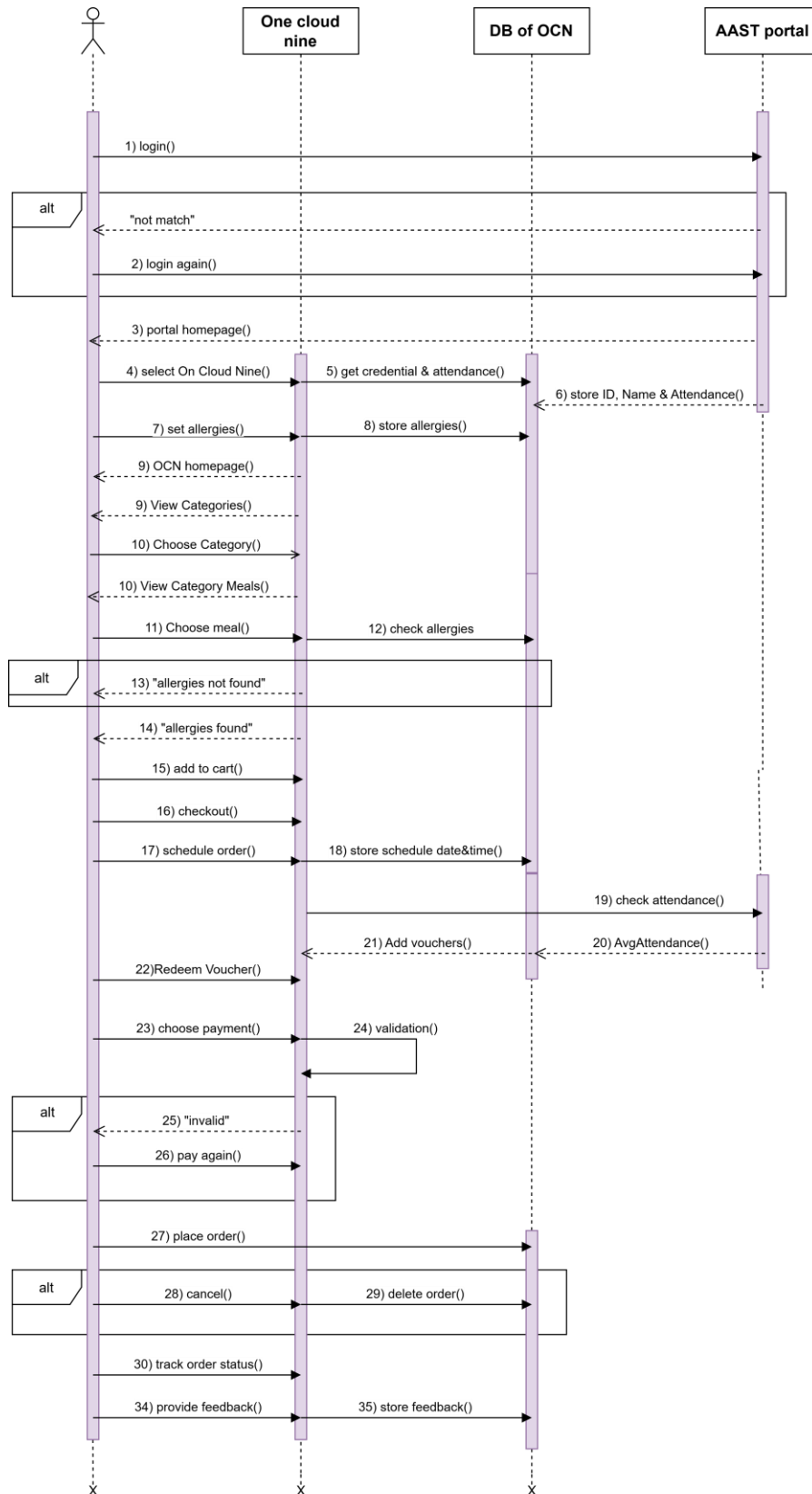
## 5. UseCase Diagram



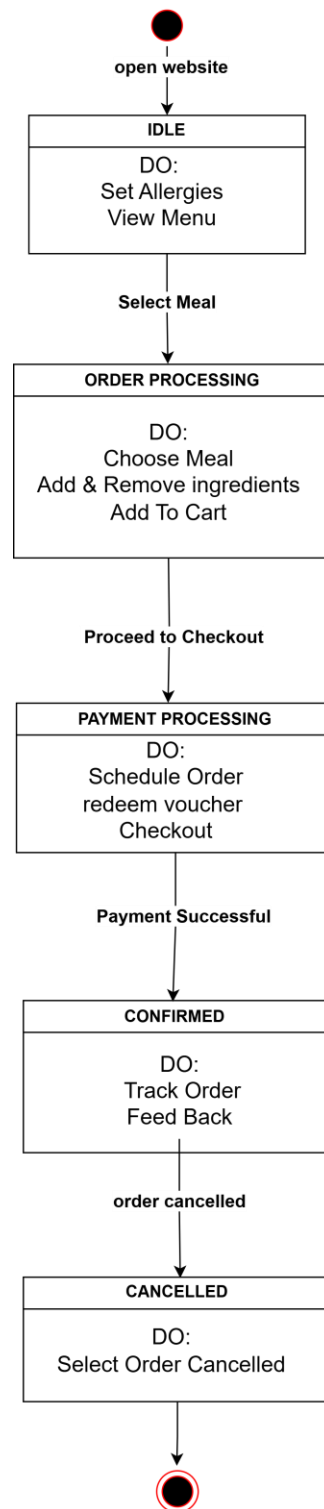
## 6. Activity Diagram



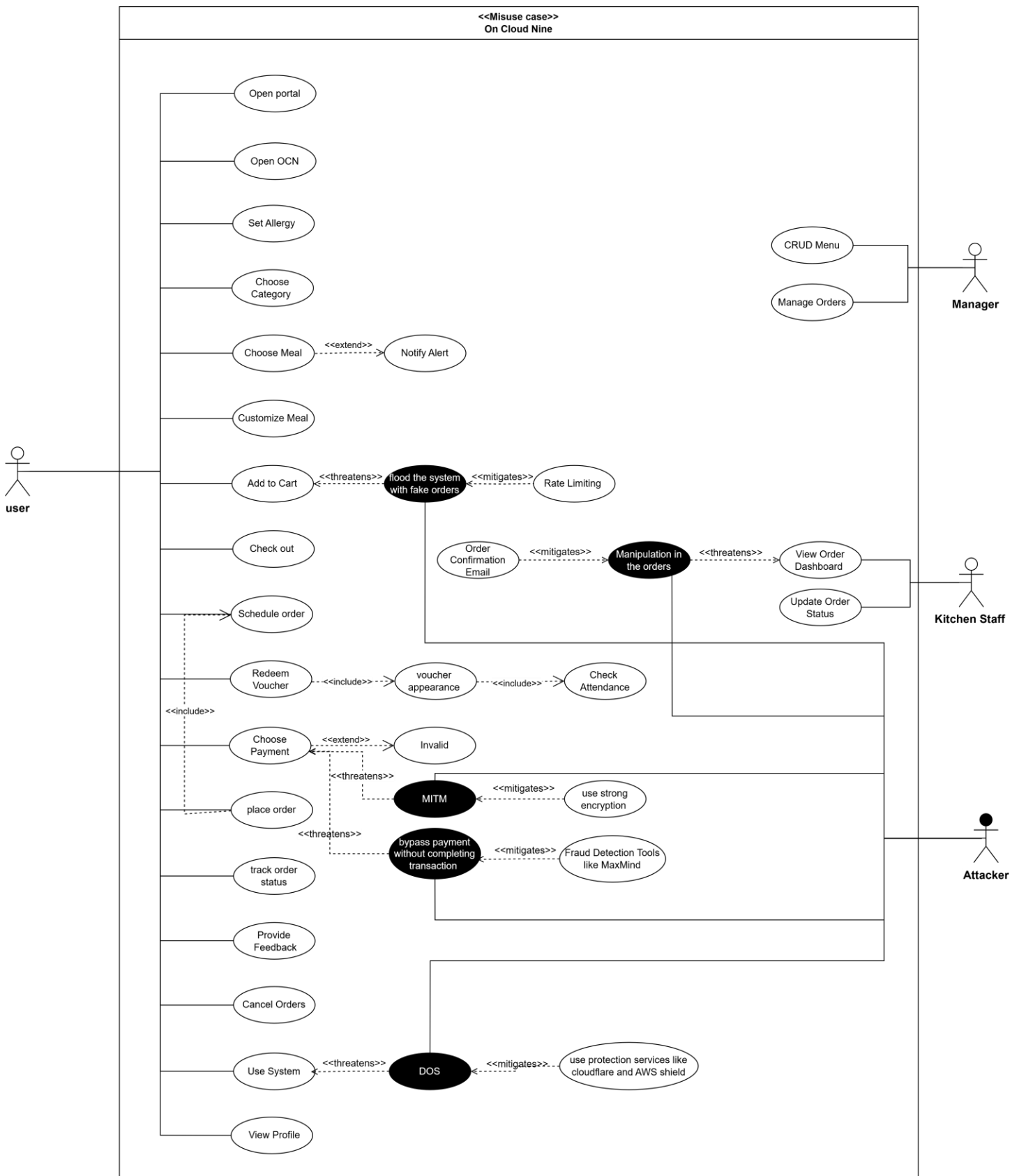
## 7. Sequence Diagram



## 8. State Diagram



## 9. Misuse Diagram



# 10. Class Diagram

