



IT314 Software Engineering  
Lab Session III Specifying Functional  
and Non-Functional Requirements  
Project: Canteen Automation System

Prepared by  
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Date  
February 24, 2023

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# 1. User Stories (front and back of the card)

## User Stories for Customer

### User Story 1:

#### Front of the card

As a customer, I want to log in securely using the app, so that I can protect my account and personal information.

#### Back of the card

##### Acceptance Criteria:

- The app asks me to enter my username and password
- The app validates my credentials and grants me access if they are correct
- The app shows me an error message if they are incorrect
- The app allows me to reset my password using my email if I forget it
- The app encrypts my login credentials and other sensitive data

##### Assumptions:

- The app has access to a secure database of registered users
- The app uses HTTPS protocol for communication
- The app follows best practices for data security

##### Dependencies:

- User Story: Register using app
- User Story: Order food using app
- User Story: Check order status using app
- User Story: Receive notifications from app
- User Story: Show QR code when picking up order

##### Notes:

- The app should have an intuitive and user-friendly interface
- The app should handle errors gracefully and provide useful feedback to users

## User Story 2:

### Front of the card

As a customer, I want to order food using the app, so that I can save time and avoid queues.

### Back of the card

#### Acceptance Criteria:

- The app shows me a menu of available food items and their prices
- The app allows me to select one or more items and add them to my cart
- The app calculates the total amount of my order and applies discounts or coupons if any
- The app asks me to choose a payment method (cash, card, wallet, etc.)
- The app confirms my order and generates a unique QR code for it
- The app sends my order details to the canteen server

#### Assumptions:

- The app has access to the canteen menu and inventory
- The app has access to various payment gateways and wallets
- The app has access to a QR code generator

#### Dependencies:

- User Story: Log in securely using app
- User Story: Check order status using app
- User Story: Receive notifications from app
- User Story: Show QR code when picking up order

#### Notes:

- The app should have an intuitive and user-friendly interface
- The app should handle errors gracefully and provide useful feedback to users

### User Story 3:

#### Front of the card

As a customer, I want to check my order status using the app, so that I can know when my food is ready for pickup.

#### Back of the card

##### Acceptance Criteria:

- The app shows me a list of my current and past orders
- The app shows me the status of each order (placed, processing, ready, picked up, canceled)
- The app allows me to cancel an order before it is processed
- The app updates the status of each order in real time

##### Assumptions:

- The app has access to the canteen server and database
- The canteen staff updates the status of each order on their end

##### Dependencies:

- User Story: Log in securely using app
- User Story: Order food using app
- User Story: Receive notifications from app
- User Story: Show QR code when picking up order

##### Notes:

- The app should have an intuitive and user-friendly interface
- The app should handle errors gracefully and provide useful feedback to users

### User Story 4:

#### Front of the card

As a customer, I want to receive notifications from the app, so that I can be alerted when my food is ready for pickup or when there are any changes or issues with my order.

#### Back of the card

#### Acceptance Criteria:

- The app sends me a push notification when my food is ready for pickup
- The app sends me a push notification when there are any changes or issues with my order (e.g. out of stock items, delayed delivery, canceled order)
- The app allows me to customize my notification settings (e.g. sound, vibration, frequency)

#### Assumptions:

- The app has access to the canteen server and database
- The canteen staff updates the status of each order on their end
- The user has enabled notifications on their device

#### Dependencies:

- User Story: Log in securely using app
- User Story: Order food using app
- User Story: Check order status using app
- User Story: Show QR code when picking up order

#### Notes:

- The notifications should be clear and concise
- The notifications should not be intrusive or annoying

### User Story 5:

#### Front of the card

As a customer, I want to show my unique QR code when picking up my order, so that I can verify my identity and prevent unauthorized access to my food.

#### Back of the card

#### Acceptance Criteria:

- The app generates a unique QR code for each order I place
- The app displays the QR code on my device screen when I tap on an order that is ready for pickup

- The canteen staff scans the QR code with their device and confirms that it matches with their record before handing over my order

Assumptions:

- The canteen staff has access to a device with a QR code scanner and internet connection
- There is no network issue or power outage that prevents scanning or verification of QR codes

Dependencies:

- User Story: Log in securely using app User Story: Order food using app
- User Story: Check order status using app User Story: Receive notifications from app

Notes:

- The QR code should be large and clear enough to be scanned easily
- The QR code should expire after a certain period of time or after being scanned once

## User Story 6:

### Front of the card

- As a customer, I want to pay for my food using the app through the integrated payment system, so that I can complete my order quickly and securely.

### Back of the card

- Acceptance Criteria:
- The app allows me to choose a payment method (debit card, credit card, QR code) after adding items to my cart
- The app integrates with various payment gateways and wallets to process my payment
- The app verifies my payment details and confirms my payment
- The app generates an invoice and a receipt for my order

- Assumptions:
- The app has access to various payment gateways and wallets
- The canteen has a QR code that customers can scan to pay
- There is no network issue or power outage that prevents payment processing
- Dependencies:
- User Story: Log in securely using app
- User Story: Order food using app
- User Story: Check order status using app
- User Story: Receive notifications from app
- User Story: Show QR code when picking up order
- Notes:
- The app should have an intuitive and user-friendly interface
- The app should handle errors gracefully and provide useful feedback to users
- The app should comply with security and privacy standards

## User Story 7:

### Front of the card

- As a customer, I want to see recommendations for similar items and items I might like based on my preferences and previous orders, so that I can discover new and better food options for me and order faster.

### Back of the card

- Acceptance criteria:
- The system analyzes the customer's order history and ratings to generate personalized recommendations for them.
- The system shows the customer similar items to the ones they have added to their cart or viewed on the system. The similar items are displayed with a label "Similar to [item name]" and a rating score based on how similar they are to the original item.
- The system shows the customer items they might like based on their dietary preferences and taste profile. The items they might like are



displayed with a label "You might also like" and a rating score based on how likely they are to appeal to the customer.

- The system allows the customer to rate and review the items they have ordered and use them as feedback for future recommendations. The rating scale is from 1 (dislike) to 5 (love). The review is optional and can be written in text form.
- The system updates its recommendations every time the customer orders or rates an item.
- Assumptions:
- The customer has ordered or given feedback for at least one item from the system before.
- The customer has provided some information about their dietary preferences and taste profile.
- The customer is interested in trying new food options that suit their needs and preferences.
- Dependencies:
- The system needs access to the customer's order history and feedback data.
- The system also needs a database of food items with relevant attributes such as price, ingredients, nutrition facts and availability.
- The system needs an algorithm to generate personalized recommendations based on similarity and preference matching.

### User Story 8:

#### Front of the card

As a customer, I want to give feedback on the food I ordered and the cafeteria I ordered from, so that cafeteria owners can improve their quality of service and other users can make informed decisions about the food they want to order.

#### Back of the card

- Acceptance criteria:

- The system allows the customer to give feedback on the food they ordered and the cafeteria they ordered from after completing their order. The feedback option is visible and accessible on the order confirmation page and in the order history section.
- The system asks the customer to rate the food and the cafeteria on a scale of 1 (poor) to 5 (excellent). The rating categories are taste, quality, quantity, price and service for food; and cleanliness, ambiance, staff friendliness and convenience for the cafeteria.
- The system also asks the customer to write a short review in text form for both food and cafeteria. The review is optional but encouraged. The system provides some guidelines and examples for writing a good review.
- The system displays the customer's feedback along with their name and date on both the food item page and cafeteria page. The system also shows an average rating score for each category based on all feedback received for that item or cafeteria.
- The system notifies the cafeteria owner about any new feedback received for their cafeteria or food items. The system also allows them to respond to customers' feedback if they wish.
- Assumptions:
  - The customer has ordered at least one item from the system before.
  - The customer is willing to share their feedback on the food and the cafeteria they ordered from.
  - The customer's feedback is honest and respectful.
- Dependencies:
  - The system needs access to the customer's order history and ratings data.
  - The system also needs a database of cafeterias with relevant information such as name, location, contact details and ratings.
  - The system needs a way to collect and display feedback from customers in a user-friendly manner.

## User Stories for Cafeteria Owners

### User Story 1:

#### Front of the card

- As a cafeteria owner, I want to have a secure and separate login system for my account, so that I can prevent unauthorized access to my personal information and manage my cafeteria online.

#### Back of the card

- Dependencies: None
- Assumptions: The login system requires an email and a password from the user. The login system uses encryption and authentication methods to protect the user's data. The login system allows the user to reset their password if they forget it. The login system logs out the user after a period of inactivity.
- Acceptance criteria:
- Given that I am a cafeteria owner who has registered for an account, when I enter my email and password correctly on the login page, then I should be able to access my account dashboard.
- Given that I am a cafeteria owner who has registered for an account, when I enter my email or password incorrectly on the login page, then I should see an error message and be asked to try again.
- Given that I am a cafeteria owner who has registered for an account but forgot my password, when I click on the "Forgot password" link on the login page, then I should be able to enter my email and receive a link to reset my password.
- Given that I am a cafeteria owner who has logged into my account, when I leave my device idle for more than 15 minutes, then I should be automatically logged out of my account.

## User Story 2:

### Front of the card

As a cafeteria owner, I want to have an easy-to-use interface and advanced features for managing my business, so that I can save time and increase efficiency.

### Back of the card

- Dependencies: Secure and separate login system
- Assumptions: The interface is designed with user-friendly icons, menus and buttons. The advanced features include inventory management, sales management and accounting management. The app syncs data with cloud storage and provides reports and analytics.
- Acceptance criteria:
- Given that I am a cafeteria owner who has logged in to my account, when I open the app, then I should see a dashboard with icons for inventory management, sales management and accounting management.
- Given that I am a cafeteria owner who wants to manage my inventory, when I tap on the inventory icon on the dashboard, then I should be able to view, add, edit and delete items in my inventory list.
- Given that I am a cafeteria owner who wants to manage my sales, when I tap on the sales icon on the dashboard, then I should be able to view, add, edit and delete orders in my sales list.

## User Story 3:

### Front of the card

As a cafeteria owner, I want to have an automated payment system for accepting payments from customers, so that I can reduce errors and increase convenience.

### Back of the card

- Dependencies: Easy-to-use interface and advanced features

- Assumptions: The payment system supports various payment methods such as cash, card and mobile. The payment system integrates with the sales management and accounting management features. The payment system provides receipts and invoices to customers.
- Acceptance criteria:
- Given that I am a cafeteria owner who wants to accept payments from customers, when I tap on the payment icon on the dashboard, then I should be able to select a payment method and enter the amount.
- Given that I am a cafeteria owner who has selected a payment method and entered the amount, when I confirm the payment, then I should be able to process the payment automatically and update my sales and accounting records accordingly.

#### User Story 4:

##### Front of the card

- As a cafeteria owner, I want to have a system that can let me change the menu and prices of my food items easily and quickly, so that I can adapt to customer demand and market changes.

##### Back of the card

- Dependencies: Inventory management and sales management features
- Assumptions: The system allows me to create, edit and delete food items with their names, descriptions, images and prices. The system updates my inventory and sales records accordingly when I change the menu or prices. The system displays the current menu and prices on a digital screen for customers to see.
- Acceptance criteria:
- Given that I am a cafeteria owner who wants to change the menu or prices of my food items, when I tap on the menu icon on the dashboard, then I should be able to see a list of all my food items with their details and edit or delete them as needed.
- Given that I am a cafeteria owner who has edited or deleted a food item, when I save the changes, then I should be able to see the updated

menu and prices on the digital screen and in my inventory and sales records.

### User Story 5:

#### Front of the card

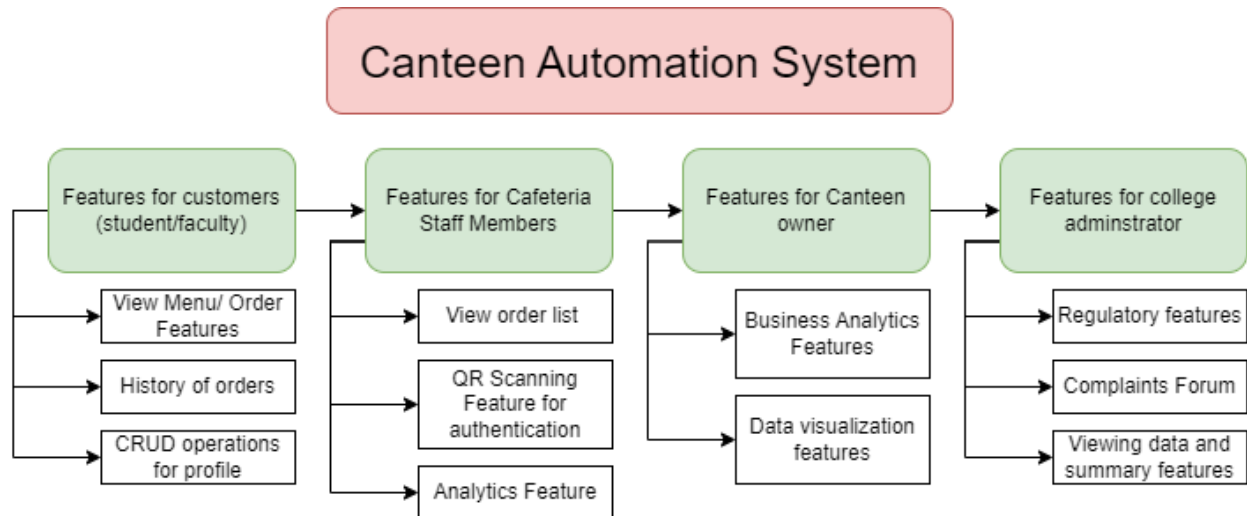
- As a cafeteria owner, I want to create special offers for my customers, so that I can increase sales and loyalty.

#### Back of the card

- Dependencies: The app must have a customer database and a payment system. Assumptions: The cafeteria owner has access to the app and can set up different types of offers such as discounts and coupons.
- Acceptance criteria:
- The app allows the cafeteria owner to create, edit and delete special offers.
- The app displays the special offers to customers on their devices when they visit or order from the cafeteria.
- The app applies the special offers automatically when customers pay for their orders.

## 2. Product Backlog

### 2.1 Product Roadmap



### 2.2 Prioritize tasks

**The product backlog is prioritized below (in terms of the user stories):**

1. As a customer, I want to log in securely using the app, so that I can protect my account and personal information.
2. As a student, I want to be able to view the menu for the day so that I can decide what to order for lunch or dinner.
3. As a student, I want to be able to place an order in advance so that I can avoid long queues during peak hours.
4. As a student, I want to be able to make payments for my orders through the canteen management system so that I can avoid carrying cash.
5. As a student, I want to be able to provide feedback on the quality of the food and service so that the canteen can make improvements.

6. As a student, I want to be able to view my order history so that I can keep track of my spending at the canteen.
7. As a canteen staff member, I want to be able to manage the inventory of food items so that we can avoid running out of stock during the day.
8. As a canteen staff member, I want to be able to update the menu for the day so that students can see the latest offerings.
9. As a canteen manager, I want to be able to generate reports on sales and inventory so that I can better manage the canteen's finances.
10. As a canteen staff member, I want to be able to track orders and ensure that they are fulfilled in a timely manner.
11. As a canteen staff member, I want to be able to view the list of orders for the day so that I can prepare them efficiently.

## 2.2 Listing the Product Backlog items (prioritized)

### **Epic:**

As a student and canteen operator, I want a mobile app that simplifies the process of managing food orders, inventory, and payments, so that I can provide an efficient and convenient service.

**User Story 1:** As a customer, I want to log in securely using the app, so that I can protect my account and personal information.

### **Feature to be implemented - Secure Login Feature:**

- Implement authentication and authorization for users
- Use encryption to store sensitive information
- Implement password reset and recovery mechanism

**User Story 2:** As a student, I want to be able to view the menu for the day so that I can decide what to order for lunch or dinner.

### **Feature to be implemented - Menu Feature:**

- Design and develop a user-friendly menu interface



- Implement a backend system to retrieve and display daily menus
- Add filtering and sorting functionality to the menu

**User Story 3:** As a student, I want to be able to place an order in advance so that I can avoid long queues during peak hours.

**Feature to be implemented - Pre-order Feature:**

- Develop a pre-order system to allow students to place orders in advance
- Implement notification system for canteen staff to receive and fulfill orders
- Allow students to modify and cancel their orders before a certain deadline
- At the time of receiving the order, the order should be authenticated by using a QR Code sent to the customer

**User Story 4:** As a student, I want to be able to make payments for my orders through the canteen management system so that I can avoid carrying cash.

**Feature to be implemented - Payment Feature:**

- Integrate an online payment system that is secure and reliable
- Provide multiple payment options such as credit/debit card, UPI, e-wallet, or mobile payment
- Ensure payment gateway integration with the canteen management system

**User Story 5:** As a student, I want to be able to provide feedback on the quality of the food and service so that the canteen can make improvements.

**Feature to be implemented - Feedback Feature:**

- Develop a feedback system to collect customer opinions and ratings

- Allow customers to leave comments and suggestions for improvements
- Provide a mechanism for the canteen management to review and respond to feedback

**User Story 6:** As a student, I want to be able to view my order history so that I can keep track of my spending at the canteen.

**Feature to be implemented - Order History Feature:**

- Create a user-friendly interface to display order history
- Implement a backend system to store and retrieve order data
- Provide filtering and sorting options for order history

**User Story 7:** As a canteen staff member, I want to be able to manage the inventory of food items so that we can avoid running out of stock during the day.

**Feature to be implemented - Inventory Management Feature:**

- Develop an inventory management system to track stock levels and monitor usage
- Implement a notification system to alert canteen staff when stocks are running low
- Allow canteen staff to update stock levels and mark items as out of stock

**User Story 8:** As a canteen staff member, I want to be able to update the menu for the day so that students can see the latest offerings.

**Feature to be implemented - Menu Update Feature:**

- Allow canteen staff to easily update the menu for the day
- Implement a notification system to inform customers of changes to the menu
- Ensure menu updates are reflected in the pre-order system

**User Story 9:** As a canteen manager, I want to be able to generate reports on sales and inventory so that I can better manage the canteen's finances.

**Feature to be implemented - Financial Report Feature:**

- Implement a reporting system to generate financial reports based on sales and inventory data
- Provide graphical representations of data such as charts and graphs
- Allow canteen management to view reports for specific time periods

**User Story 10:** As a canteen staff member, I want to be able to track orders and ensure that they are fulfilled in a timely manner.

**Feature to be implemented - Order Tracking Feature:**

- Develop a system to track orders and their status in real-time
- Provide canteen staff with a dashboard to view and manage orders
- Implement notifications for order status updates

**User Story 11:** As a canteen staff member, I want to be able to view the list of orders for the day so that I can prepare them efficiently.

**Feature to be implemented - Order List Feature:**

- Develop a system to display the list of orders for the day
- Allow canteen staff to mark orders as completed or canceled
- Implement sorting and filtering options for the order list

### 3. Sprint Plan

We will be implementing the project in 5 sprints. Each sprint will have a duration of 1 week.

**Product Owner:** TBD

**Scrum Master:** Dhruv Patel

## **Sprint 1**

**Features to be implemented in 1st sprint:**

- Secure Login Feature
- View Order Feature
- Front-end of the application

## **Sprint 2**

**Features to be implemented in 2nd sprint:**

- Pre-order Feature
- Payment Feature

## **Sprint 3**

**Features to be implemented in 3rd sprint:**

- Feedback Feature
- Order History Feature

## **Sprint 4**

**Features to be implemented in 4th sprint:**

- Inventory Management Feature
- Menu Update Feature

## **Sprint 5**

**Features to be implemented in 5th sprint:**

- Financial Report Feature
- Order Tracking Feature

- Order-list (view/delete) Feature