1. Register as Customer

Scope: Smart Store System

Level: User Goal

Intention: A Customer registers with the smart store system.

Multiplicity: Many Customers can register simultaneously.

Primary Actor: Customer

Secondary Actors: System Administrator

Main Success Scenario:

Customer downloads and installs the smart store mobile application.

Customer provides personal information and payment details to the System Administrator.

System Administrator verifies the information and registers the Customer.

System Administrator sends a confirmation message to the Customer.

Extensions:

1a. Customer provides invalid information.

1a.1. System Administrator displays an error message.

1a.2. Use case continues at step 2.

2. Enter Store

Scope: Smart Store System

Level: User Goal

Intention: A Customer enters the store using their registered mobile device or credit card.

Multiplicity: Many Customers can enter the store simultaneously.

Primary Actor: Customer

Secondary Actors: Entry Gate, Camera

Main Success Scenario:

Customer approaches the Entry Gate.

Customer scans their registered mobile device or credit card at the Entry Gate.

Entry Gate verifies the Customer's registration.

Camera captures an image of the Customer.

System associates the image with the Customer's account.

Entry Gate opens for the Customer.

Extensions:

2a. Customer does not have internet access.

2a.1. Customer uses their pre-registered credit card to enter the store.

2a.2. Use case continues at step 3.

2b. Customer is not registered.

2b.1. Entry Gate displays an error message.

2b.2. Use case ends in failure.

3. Shop for Items

Scope: Smart Store System

Level: User Goal

Intention: A Customer selects and picks up items from the shelves.

Multiplicity: Many Customers can shop simultaneously.

Primary Actor: Customer

Secondary Actors: Weight Sensor, Pressure Sensor, Tag Reader, Camera

Main Success Scenario:

Customer picks up an item from the shelf.

Weight Sensor, Pressure Sensor, and Tag Reader detect the item.

System identifies the item using the sensor data.

Camera captures an image of the Customer with the item.

System associates the item with the Customer's virtual cart.

Extensions:

3a. System fails to identify the item.

3a.1. System logs the error.

3a.2. System prompts the Customer to manually scan the item's barcode.

3b. Customer puts the item back on the shelf.

3b.1. System removes the item from the Customer's virtual cart.

4. Exit Store

Scope: Smart Store System

Level: User Goal

Intention: A Customer exits the store with their purchased items.

Multiplicity: Many Customers can exit the store simultaneously.

Primary Actor: Customer

Secondary Actors: Entry Gate, Camera, Communication Module, Payment Gateway

Main Success Scenario:

Customer approaches the Exit Gate.

Customer scans their registered mobile device or credit card at the Exit Gate.

Entry Gate verifies the Customer's registration.

Camera captures an image of the Customer.

System retrieves the Customer's virtual cart.

System sends the virtual cart to the Payment Gateway.

Payment Gateway processes the payment using the Customer's preferred payment method.

Payment Gateway confirms the successful payment.

Entry Gate opens for the Customer.

Extensions:

4a. Customer does not have internet access.

4a.1. Customer uses their pre-registered credit card to exit the store.

4a.2. Use case continues at step 3.

4b. Payment is declined.

4b.1. System displays an error message to the Customer.

4b.2. Use case ends in failure.

5. Manage Payment

Scope: Smart Store System

Level: User Goal

Intention: A Customer sets up their preferred payment method and authorizes automatic payment processing.

Multiplicity: Many Customers can manage their payment settings simultaneously.

Primary Actor: Customer

Secondary Actors: None

Main Success Scenario:

Customer accesses their account settings in the smart store mobile application.

Customer selects their preferred payment method.

Customer authorizes automatic payment processing.

System saves the Customer's payment settings.

Extensions:

5a. Customer enters invalid payment information.

5a.1. System displays an error message.

5a.2. Use case continues at step 2.

6. Identify Customer

Scope: Smart Store System

Level: Sub-Functional

Intention: The system identifies a Customer entering or exiting the store using their registered mobile device or credit card.

Multiplicity: The system can identify multiple Customers simultaneously.

Primary Actor: None

Secondary Actors: Entry Gate, Mobile Device, Credit Card

Main Success Scenario:

Customer presents their registered mobile device or credit card at the Entry Gate.

Entry Gate reads the unique identifier from the mobile device or credit card.

System verifies the identifier against the Customer database.

System confirms the Customer's identity.

Extensions:

6a. Identifier is invalid or not found in the database.

6a.1. Entry Gate displays an error message.

6a.2. Use case ends in failure.

7. Recognize Customer

Scope: Smart Store System

Level: Sub-Functional

Intention: The system recognizes a Customer inside the store using facial recognition technology.

Multiplicity: The system can recognize multiple Customers simultaneously.

Primary Actor: None

Secondary Actors: Camera

Main Success Scenario:

Camera captures an image of a Customer inside the store.

System analyzes the image using facial recognition algorithms.

System matches the image with a registered Customer in the database.

System confirms the Customer's identity.

Extensions:

7a. System fails to recognize the Customer.

7a.1. System logs the error.

8. Identify Item

Scope: Smart Store System

Level: Sub-Functional

Intention: The system identifies an item using weight sensors, pressure sensors, and tag readers.

Multiplicity: The system can identify multiple items simultaneously.

Primary Actor: None

Secondary Actors: Weight Sensor, Pressure Sensor, Tag Reader

Main Success Scenario:

Customer picks up an item from the shelf.

Weight Sensor, Pressure Sensor, and Tag Reader detect the item.

System combines the sensor data to identify the item.

Extensions:

8a. System fails to identify the item.

8a.1. System logs the error.

9. Update Virtual Cart

Scope: Smart Store System

Level: Sub-Functional

Intention: The system updates the Customer's virtual cart with the items they have picked up.

Multiplicity: The system can update multiple virtual carts simultaneously.

Primary Actor: None

Secondary Actors: None

Main Success Scenario:

System identifies an item picked up by a Customer.

System adds the item to the Customer's virtual cart.

Extensions:

9a. System fails to update the virtual cart.

9a.1. System logs the error.

10. Process Payment

Scope: Smart Store System

Level: Sub-Functional

Intention: The system processes the payment for the Customer's virtual cart using the payment gateway.

Multiplicity: The system can process multiple payments simultaneously.

Primary Actor: None

Secondary Actors: Communication Module, Payment Gateway

Main Success Scenario:

System sends the Customer's virtual cart to the Payment Gateway.

Payment Gateway processes the payment using the Customer's preferred payment method.

Payment Gateway confirms the successful payment.

Extensions:

10a. Payment is declined.

10a.1. System displays an error message to the Customer.

10a.2. Use case ends in failure.

11. Open Exit Gate

Scope: Smart Store System

Level: Sub-Functional

Intention: The system opens the exit gate for the Customer after successful payment.

Multiplicity: The system can open multiple exit gates simultaneously.

Primary Actor: None

Secondary Actors: Exit Gate

Main Success Scenario:

System receives confirmation of successful payment from the Payment Gateway.

System sends a signal to the Exit Gate to open.

Exit Gate opens for the Customer.

Extensions:

11a. Exit Gate fails to open.

11a.1. System logs the error.

12. Monitor Inventory

Scope: Smart Store System

Level: Sub-Functional

Intention: The system monitors the inventory levels of items on the shelves.

Multiplicity: The system can monitor multiple items simultaneously.

Primary Actor: None

Secondary Actors: Weight Sensor, Pressure Sensor, Tag Reader

Main Success Scenario:

Weight Sensor, Pressure Sensor, and Tag Reader continuously monitor the items on the shelves.

System receives data from the sensors and updates the inventory database.

Extensions:

12a. System fails to receive data from the sensors.

12a.1. System logs the error.

13. Restock Shelves

Scope: Smart Store System

Level: Sub-Functional

Intention: The system alerts Staff when items need to be restocked.

Multiplicity: The system can alert multiple Staff members simultaneously.

Primary Actor: None

Secondary Actors: Staff

Main Success Scenario:

System detects low inventory levels for an item.

System sends a notification to Staff to restock the item.

Extensions:

13a. Staff fails to receive the notification.

13a.1. System logs the error.