

User Requirement Specification Report

GET FRESH FOOD



SA50 Team 9

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1. Background

GetFreshFood is a standalone supermarket catering to heartlanders residing in the neighbourhood. As a small business running for decades, it relies heavily on manual processes and physical record-keeping in its day-to-day operations. However, given the large variety of goods sold and the sheer number of manual processes required, the current mode of operation is increasingly untenable. Frequent loss of sales, discrepancies in physical inventory and inventory record, and increasing overtime required by cashiers to tally accounts are the most direct reflection of a system urgently needing improvement. In addition, with the supermarket landscape now disrupted by e-commerce, there is a strong need for GetFreshFood to maintain parity with the competition.

Based on the abovementioned problems that GetFreshFood faces, we at Whitestar Computing propose the four following solutions: 1) Centralised Management System, 2) Customer Application, 3) Employee Application and 4) Self-Checkout Kiosk (for customers), which will be further elaborated in the next page.

2. Overview of Project Scope

Project scope covers :

- Centralised management system:
 - Point of Sale (POS) system which stores all transactional information for generating reports, such as end-of-day sales reports and weekly sales reports.
 - Infrared price displays will be implemented for automated pricing updates, the prices are changed according to the updates received from the inventory list.
 - Centralised inventory management will reduce misinformation among each user, where all updates of inventory details will be recorded in the centralised system.
- Customer application in the form of a mobile app or web app for customers to:
 - Conduct online purchases.
 - Browse the online product catalogue and check for their availability.
 - Be notified on upcoming promotions.
 - Monitor their online order status.
 - Review their online purchase history.
 - Apply for refunds online.
- Employee application in the form of a mobile app or web app for employees to:
 - Notify relevant staff of incoming online orders made by customers so that they may process the orders for delivery.
 - Update and keep track of inventory records to prevent inventory discrepancies.
 - Expedite approval processes such as purchase forms to ensure that products are always in stock.

- Update personal particulars.
- Generate reports based on parameters.
- Self-checkout kiosk at the physical shop for customers to check out their purchases without going through the traditional cashier's checking out process.

Project scope does not cover:

- Delivery of online orders – handled by third party
- Distance-based delivery payment
- Handling of failed deliveries for online orders
- Automated sorting of products
- Generation of barcodes for products not adopting the Universal Product Code
- Automated packing of customer online orders
- Automated reshelfing of products that are running low / after product re-classification
- Real-time location of products on shelves
- Automated inspection of deliveries from suppliers
- Self-pick up of online orders by customers
- Online processing of purchase order to suppliers
- Loyalty program for customers
- Processing of customers' feedback
- Live Chat with Staff

Before designing the proposed solutions, we first observed and interviewed our internal and external users, namely: the Cashiers, Branch Manager, Storemen, Promoters and Customers. This is for us to better understand the respective user groups and to define the most critical use cases and features of our solutions. We thank them for taking the time to provide us with useful insights and their experiences regarding the operations at GetFreshFood as well as their honest feedback and cooperation.

In the following pages of section 3, we have come up with the Personas and Customer Journey Maps for two of the user groups: Customer and Store Man.

Following that, Section 4 will consist of the user stories that we have derived from the two Personas.

For Section 5, we provided the system use case diagram, where we extracted the use cases from their respective user stories. For each use case, we came up with their corresponding activity and class diagrams which will be shown in Section 6.

In Section 7, we will showcase our solutions via the screen designs provided.

Finally, in Section 8 we will take a deep dive into the non-functional requirements of this project.

3. Personas and Journey Maps

3.1 Customer Persona

 CUSTOMER PERSONA



BIO

Amanda is a long-term customer of GetFreshFood for over 20 years. She typically visits the store about twice per week after work to get some groceries for herself and her family. She likes to shop at GetFreshFood due to the good customer service provided, close proximity to her house and because of her friendship with the current staff. As a repeat and frequent patron of Get Fresh Food, she hopes to be kept up-to-date on new stock arrivals and ongoing promotions to get the best prices and freshest food available.

AMANDA
CUSTOMER

"The supermarket is my second home, it is a vital part of the kampong spirit."

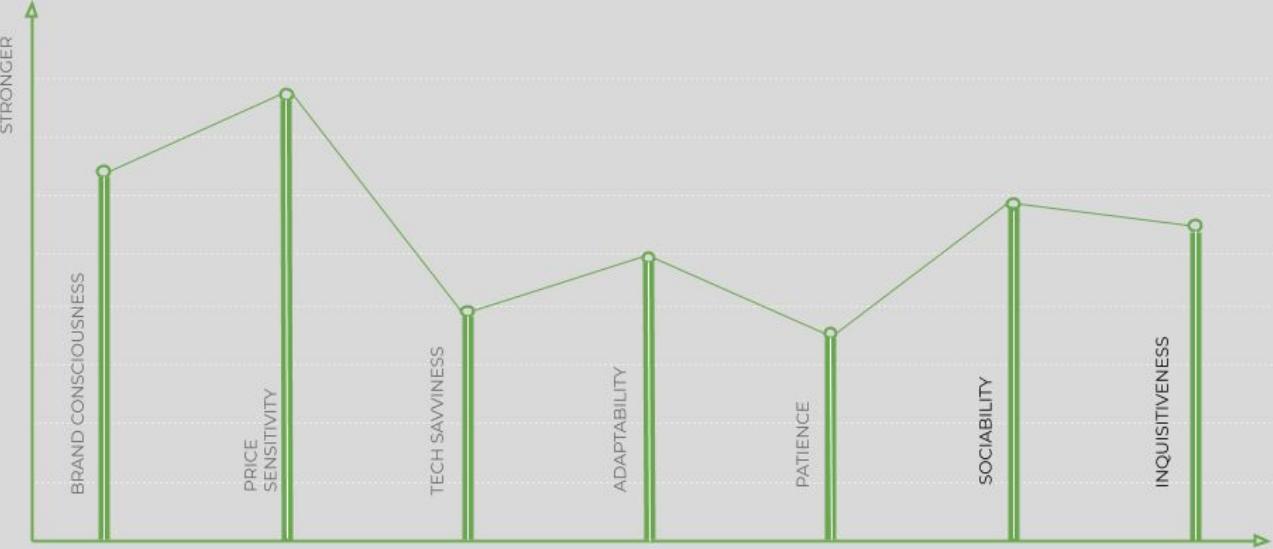
INFLUENCERS

- Ease of locating products
- Variety in payment methods
- Ease of use of self checkout kiosks
- Ability to specify delivery times
- Punctuality of delivery
- Accessibility to updates on stock availability
- Accessibility to updates on upcoming promotions

PRIMARY USE	GOALS	PAIN POINTS
 → Purchasing small daily groceries for household → Convenient neighbour mart for last minute purchases → Purchasing products on promotions	 → To purchase good quality and fresh products → Quick fuss free shopping experience → Shopping experience with personal touch from friendly and helpful staff → Up-to-date with ongoing promotions → Being billed correctly → Able to keep track of orders and payment	 → Inaccurate price tags on products → Long queue times when making payment → Availability of products → Hard to get in-store help

 METRICS



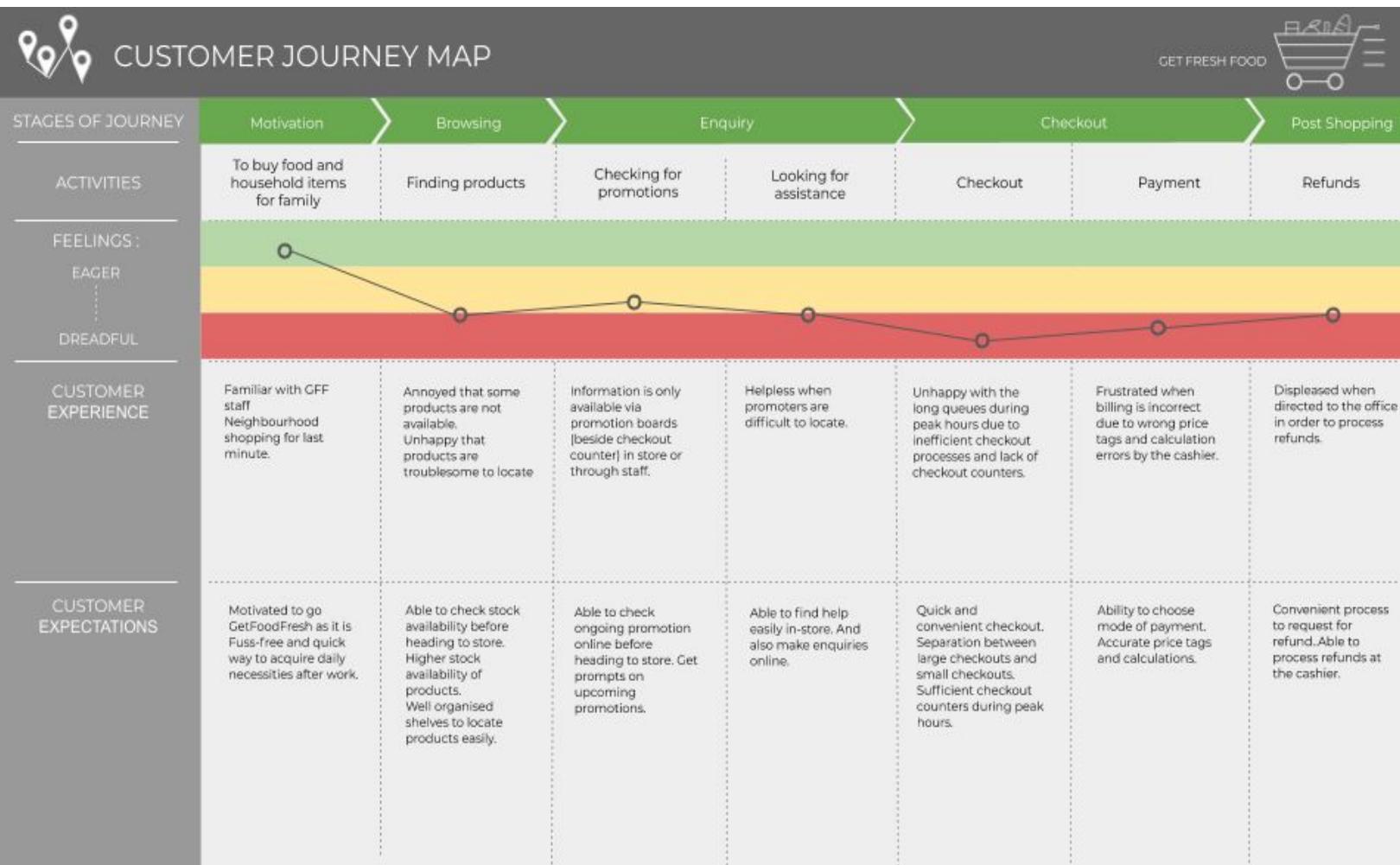


The chart displays personality traits on a scale from STRONGER (top) to WEAKER (bottom). The traits and their approximate scores are:

- BRAND CONSCIOUSNESS: STRONGER
- PRICE SENSITIVITY: STRONGER
- TECH SAVVINESS: WEAKER
- ADAPTABILITY: STRONGER
- PATIENCE: WEAKER
- SOCIALITY: STRONGER
- INQUIRIVENESS: STRONGER

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3.2 Customer Journey Map



3.3 Store Man Persona

 STORE MAN PERSONA



BIO

Helming the role of store man at GetFreshFood, Tom has been the mainstay of the supermarket's daily operations for the past 15 years. While he may be in his fifties, Tom displays passion in his work and is fastidious about the accuracy of the supermarket inventory records. As a result, he often has run-ins with colleagues whom he perceived to have compromised his ability to maintain records. Being a digital immigrant late to adopt the use of technology in his daily life, he is unaware that alleviating the tediousness of the processes at work requires moving beyond pen and paper.

TOM
STORE MAN

"My bread and butter is getting stores done right."

 PRIMARY USE

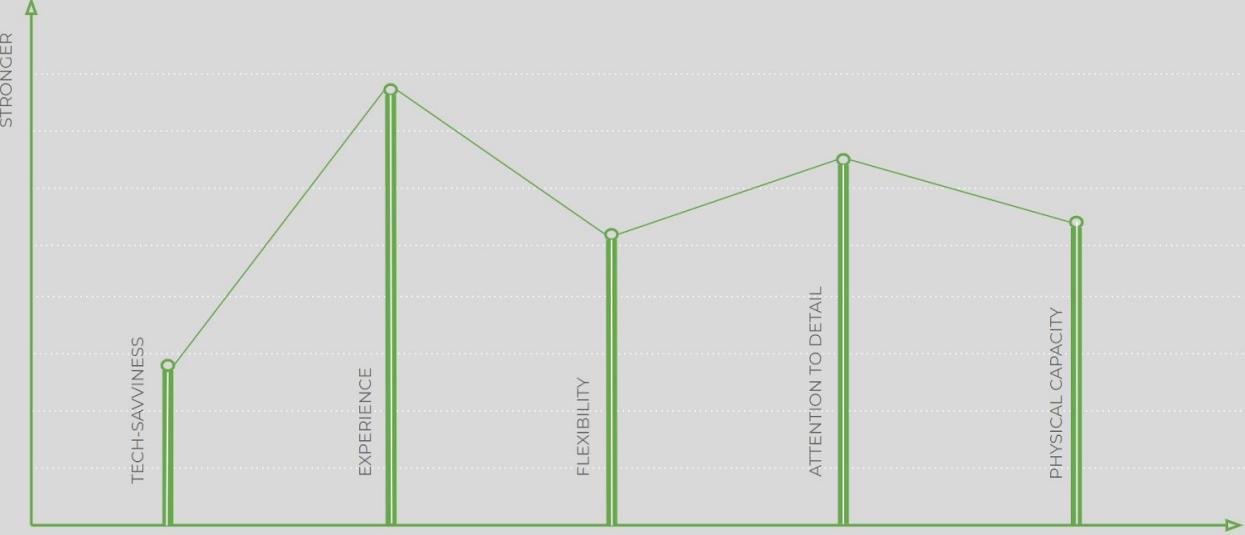
- Accounting of physical inventory (daily updates on paper)
- Monthly stock-take (actual counting)
- Raise purchase order to restock items
- Inspection of delivered goods
- Return of defective/expired goods
- Organisation of store room
- Handover of goods to promoters for shelf placement

 GOALS

- Fully accounted inventory
- Minimise inventory wastage
- High availability of products
- Ensure quality of incoming products

 METRICS

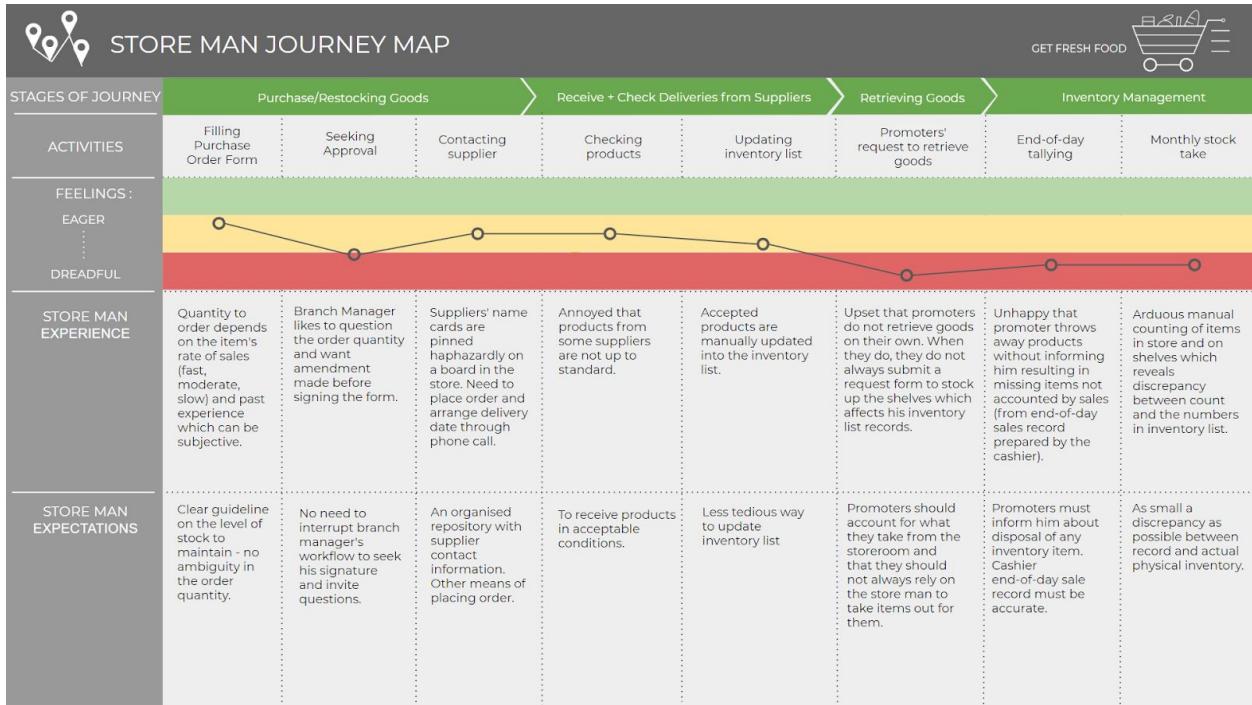




The graph illustrates the strengths of the Store Man persona across five key dimensions:

Metric	Strength Level
TECH-SAVVINESS	Medium
EXPERIENCE	Very Strong
FLEXIBILITY	Medium
ATTENTION TO DETAIL	Very Strong
PHYSICAL CAPACITY	Medium

3.4 Store Man Journey Map



4. User Stories Derived from Personas

User stories originating from the Store Man persona	
Information from Persona	User Stories
Fully accounted inventory	<p>As a store man, I want to update the inventory list after accepting products ordered from suppliers.</p> <p>As a store man, I want a record of items taken out of the storeroom for shelf display so that I can account for the movement of inventory.</p> <p>As a promoter, I would like to update the inventory list when restocking the shelves.</p> <p>As a store man, I want a record of all the products disposed of so that I can account for the decrease in inventory.</p> <p>As a promoter, I would like to update the inventory list when disposing expired products.</p> <p>As a store man, I would like to be notified when a batch of products is near expiry so that I will remember to dispose of them from the store.</p> <p>As a store man, I would like to retrieve the remaining stock list so that I can check if it's consistent with the physical number.</p> <p>As a branch manager, I would like to add new products into the inventory list so that newly carried products are reflected.</p>

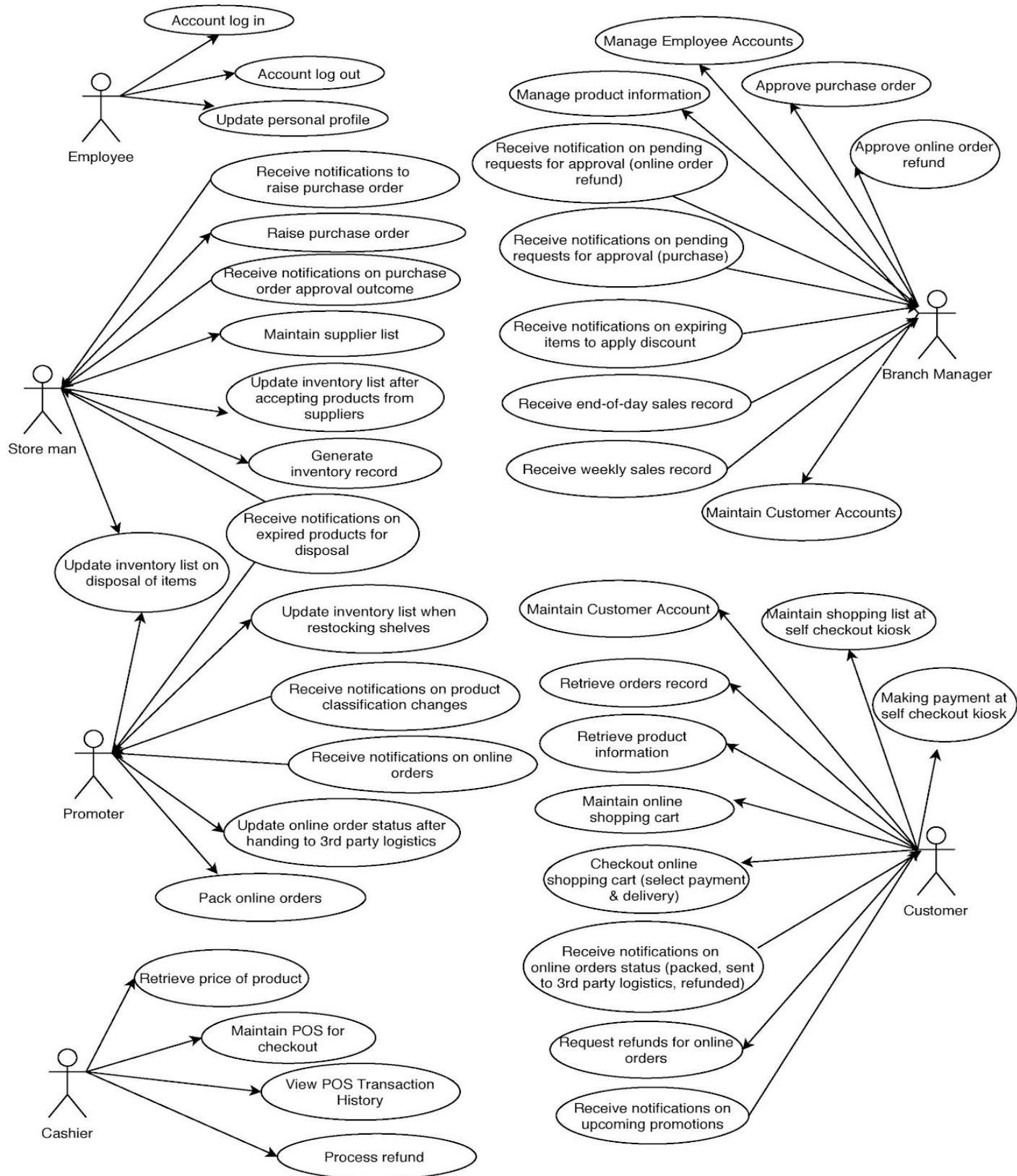
Ensure quality of incoming products	As a store man, I want to update the supplier's grade based on the quality of products received/ number of products rejected to impose stricter quality checks when required.
Minimise inventory wastage	As a branch manager, I would like to be notified of expiring products so that I can apply discounts to the products for quicker sale. As a customer, I would like to be notified when there are discounted items to save money.
Maintain product stock level	As a store man, I want to be notified when stock for a product falls below the threshold level for its category so that I can raise a purchase order. As a store man, I want to forward purchase orders directly to the branch manager for approval so that there is no delay in placing orders with suppliers. As a store man, I want to retrieve a list of suppliers' information so that I can contact the supplier and order products easily. As a branch manager, I want to retrieve weekly sales of items so that I can categorise the products correctly according to their rate of sales. As a branch manager, I would like a list of purchase orders raised so that approval can be granted quickly.

User stories originating from the Customer persona

Information from Persona	User Stories
Availability of Products	<p>As a customer, I would like to retrieve the stock availability of products before heading to the physical store so that I will not make wasted trips.</p>
Long Queue Times	<p>As a customer, I would like to check out my shopping cart online so I can skip the long physical queues.</p> <p>As a cashier, I would like to check the product price so that I can immediately show it to customers.</p> <p>As a promoter, I would like to retrieve orders made online so that I can ready the ordered items for delivery.</p> <p>As a customer, I would like to check out my groceries myself so that I can shorten my queue times.</p>
Keeping up-to-date on ongoing promotions	<p>As a customer, I would like to be notified when there are upcoming promotions, so that I am aware of the ongoing promotions before heading to the physical store.</p>
Ability to keep track of orders and payments	<p>As a customer, I would like to retrieve a record of all my orders made so I can keep track of my orders and payments.</p>
Ability to specify delivery times	<p>As a customer, I would like to select the delivery date and time of my online orders so that I can control when my online orders arrive.</p>
Ease of usage of self-checkout kiosk	<p>As a customer, I would like to use the self-checkout with clear instructions so that I do not have to waste time queuing up to pay.</p>

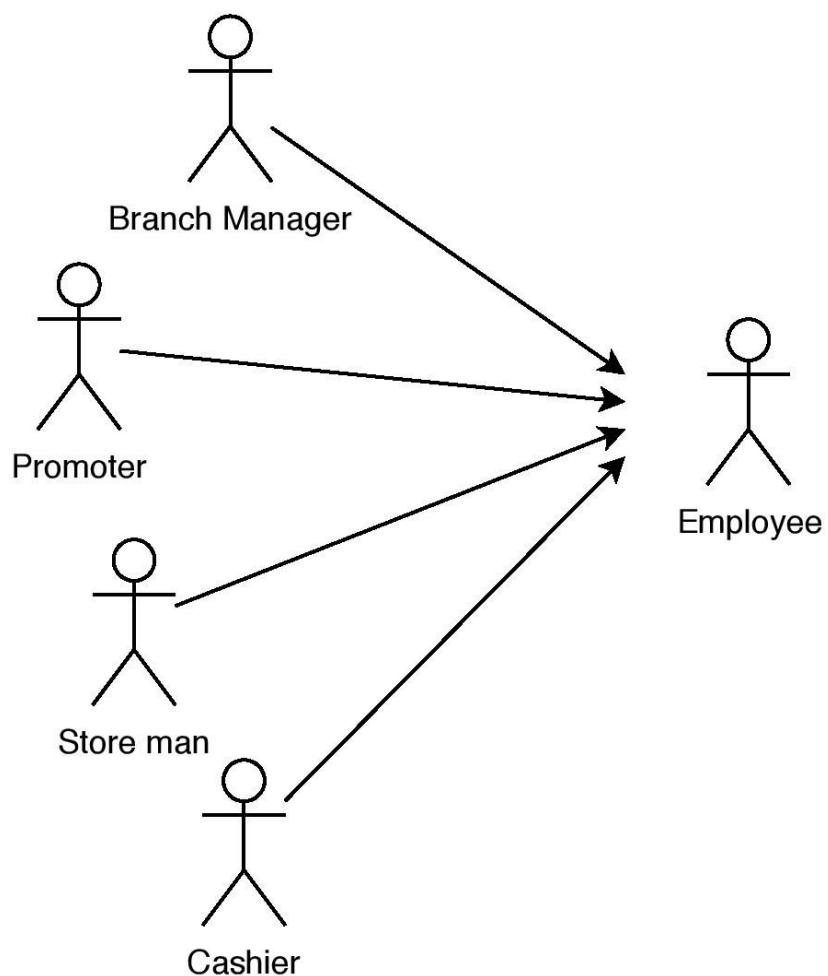
Payment	As a customer, I would like to select my preferred payment mode so that I can pay in the payment mode I use most often.
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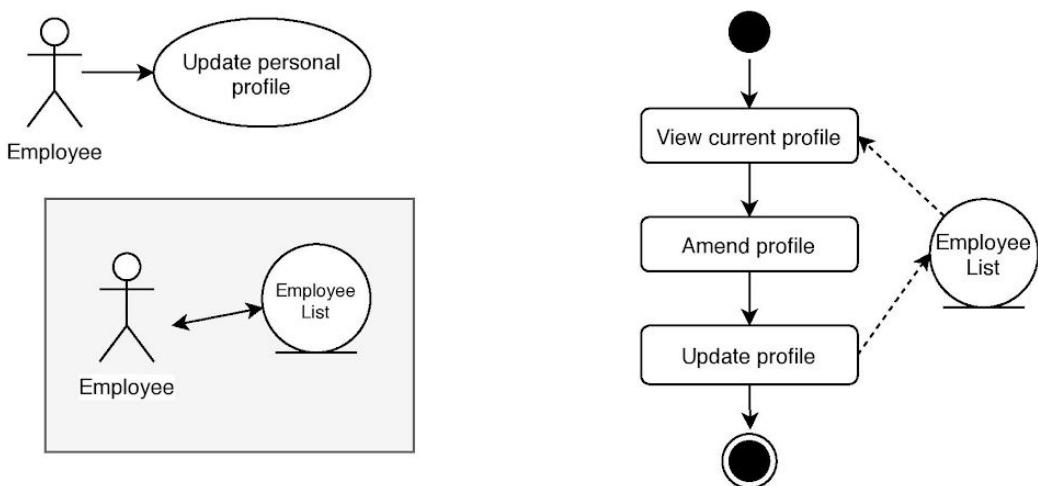
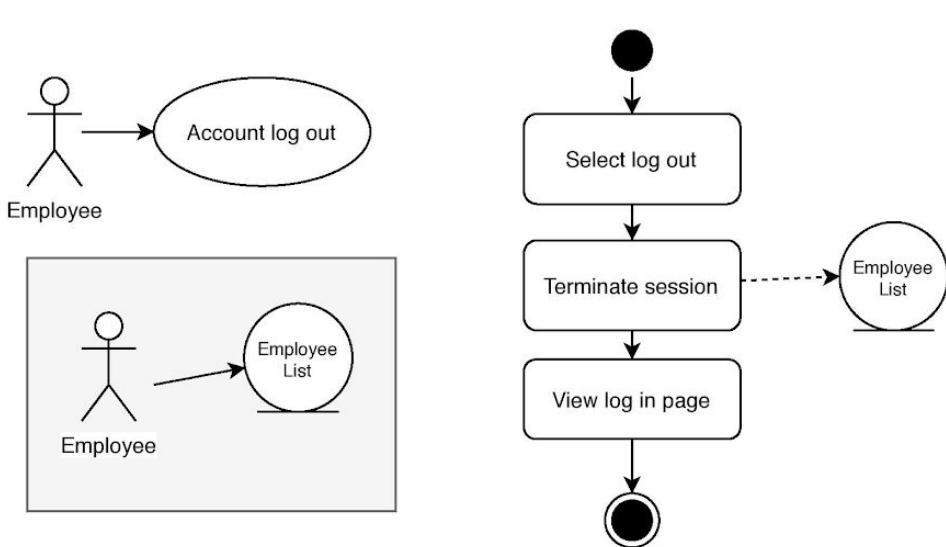
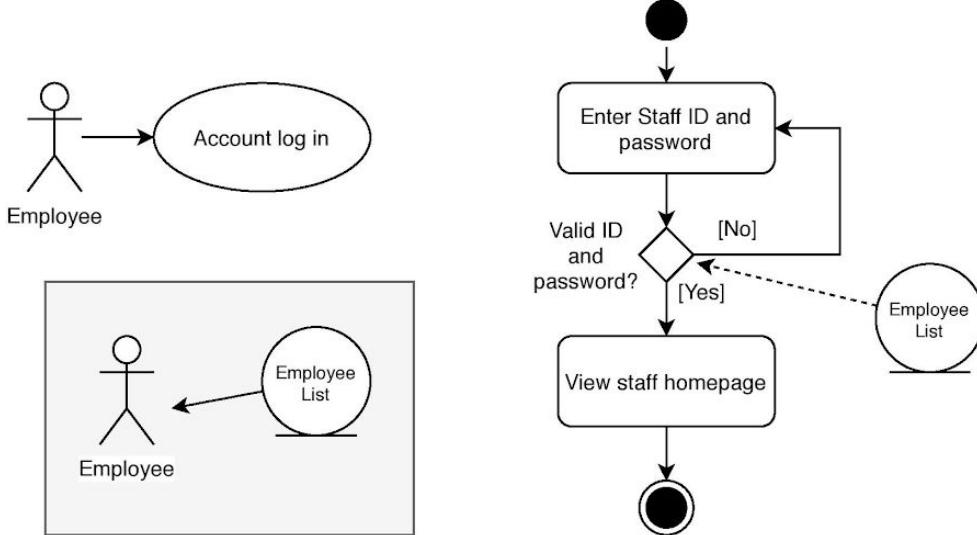
5. System Use Case Diagram



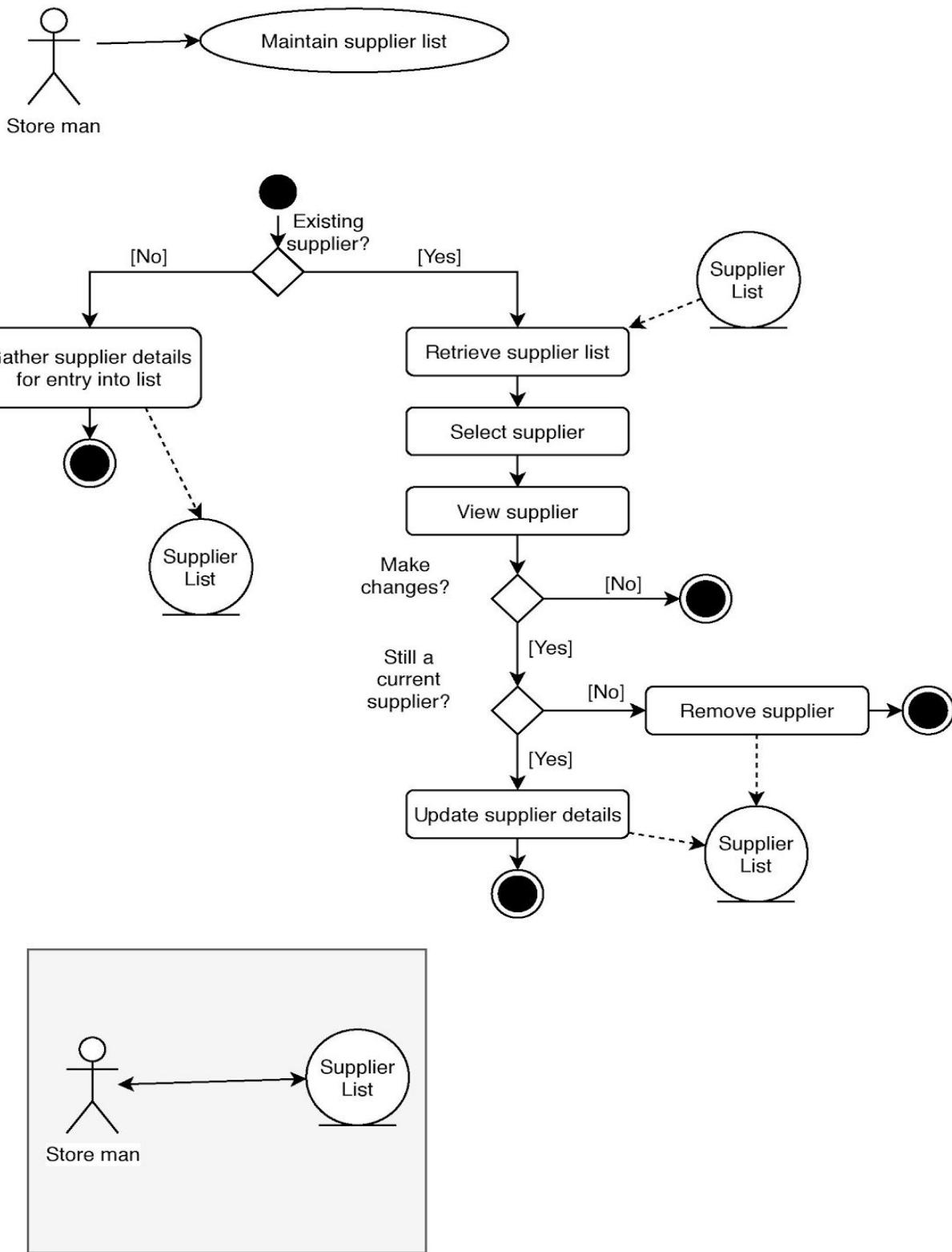
6. Activity Diagrams

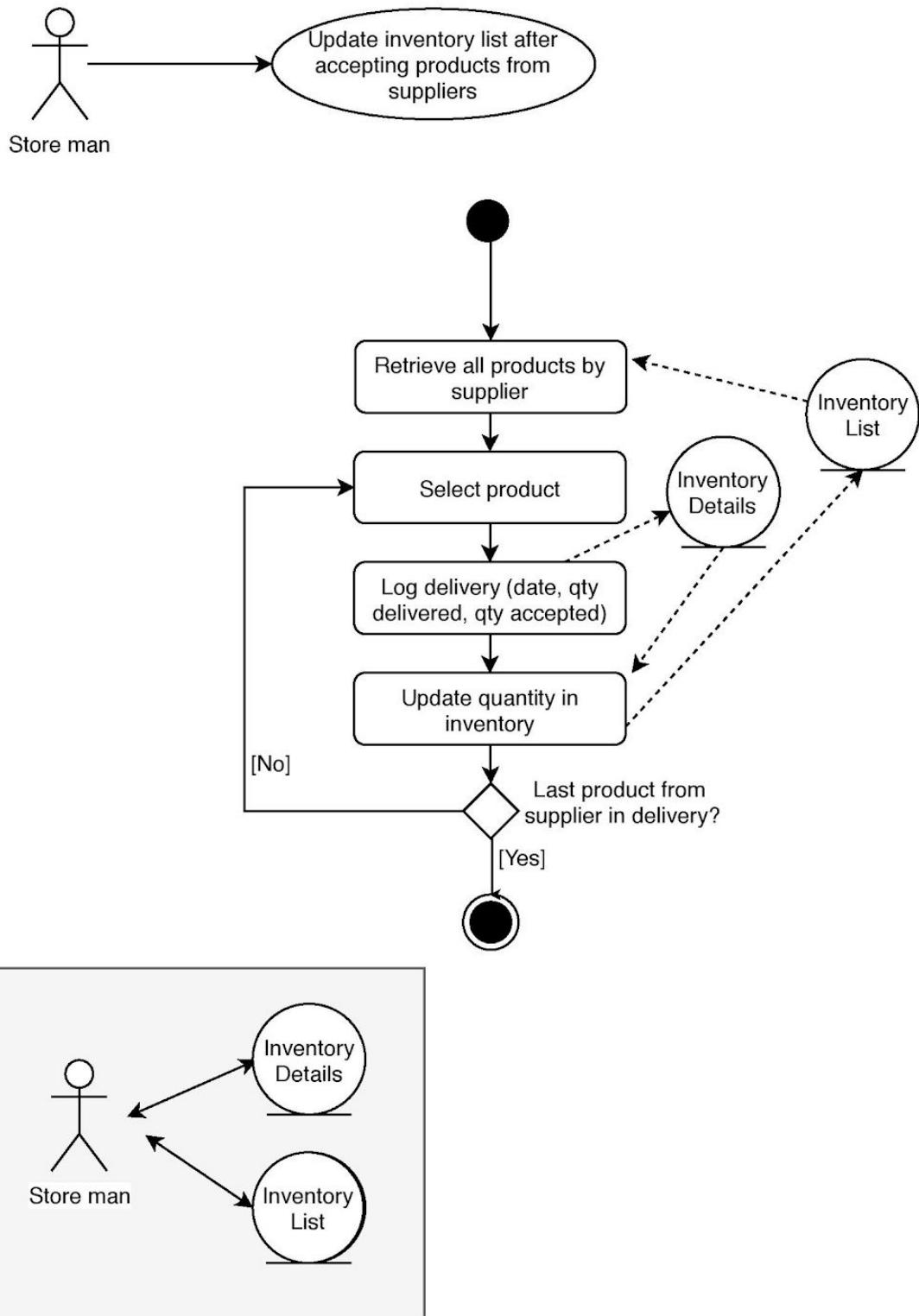
6.1 Generalised Actor – Employee

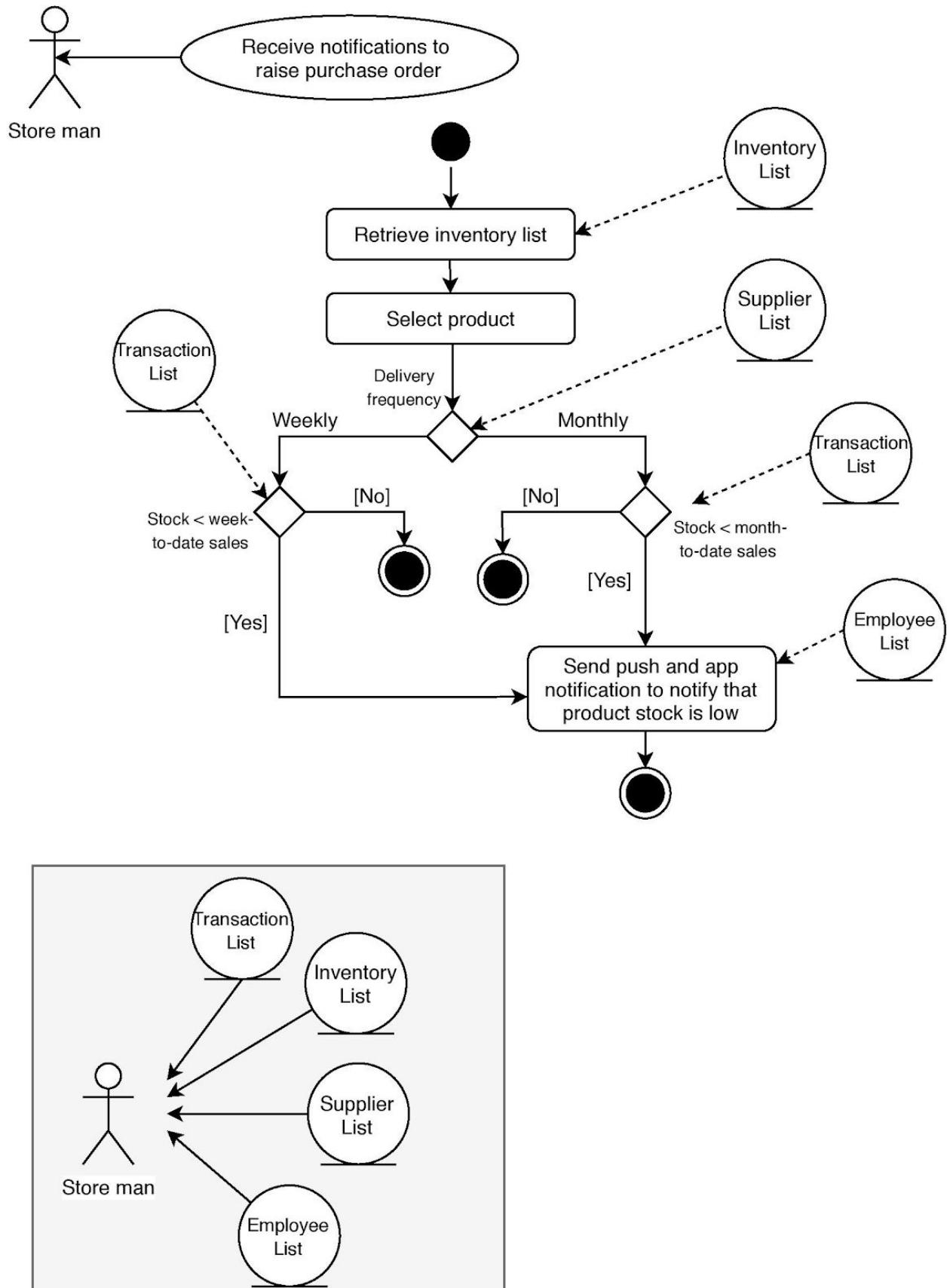


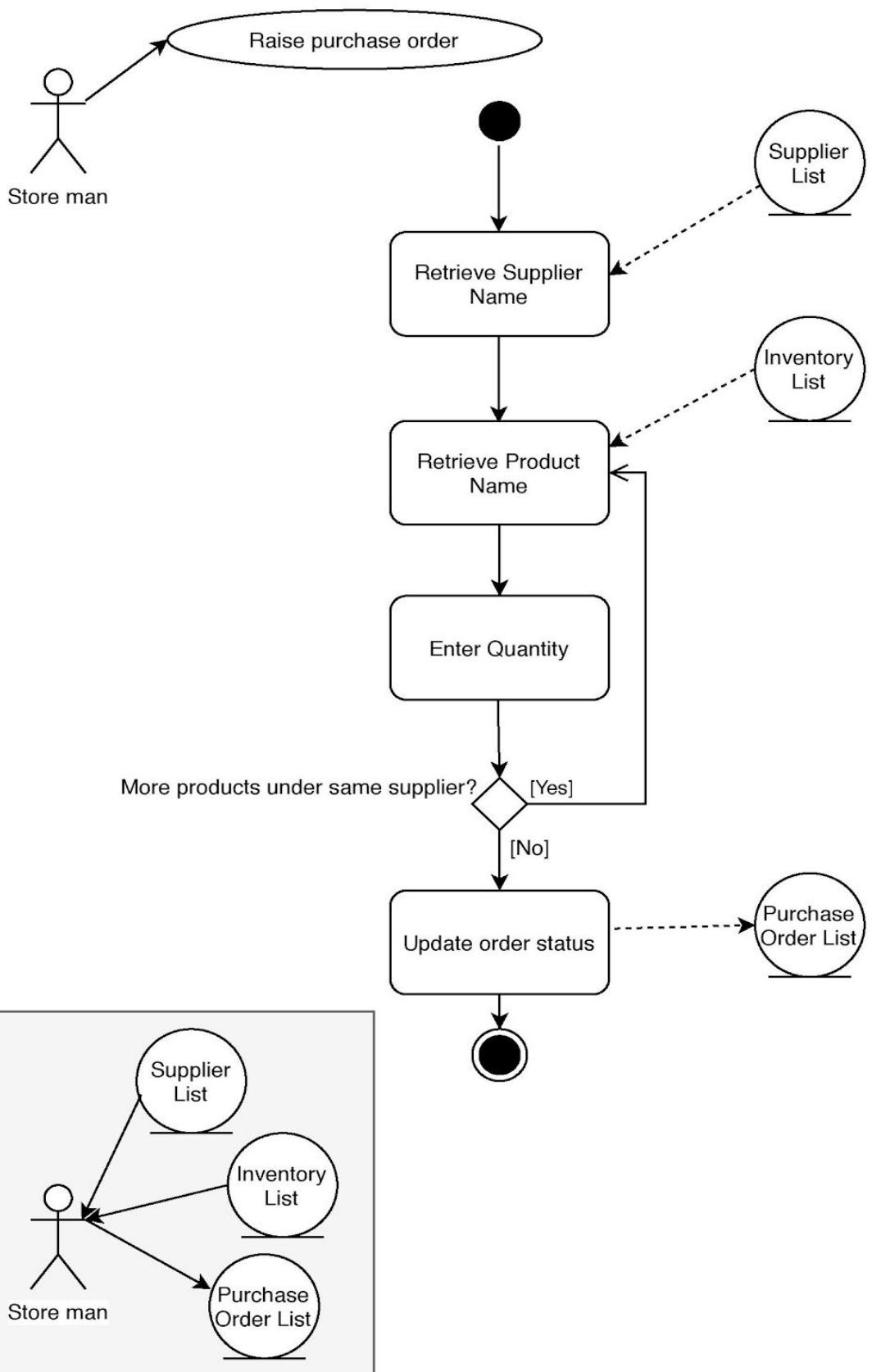


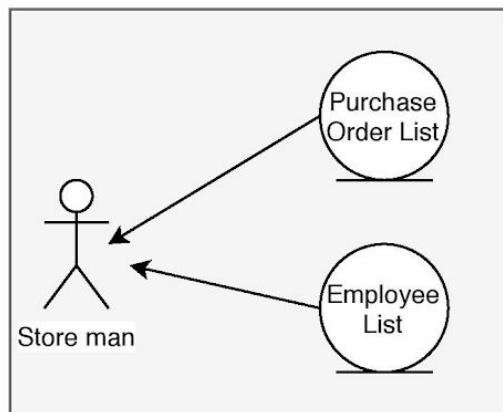
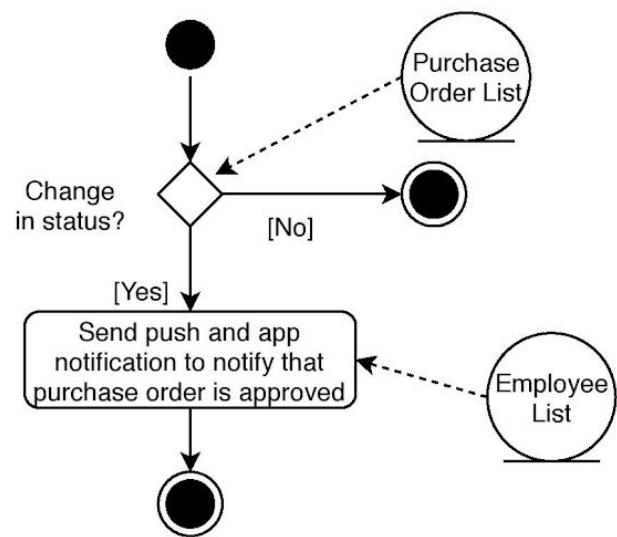
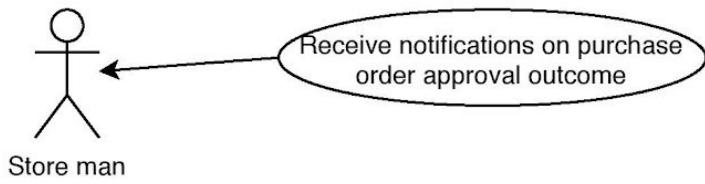
6.2 Store Man

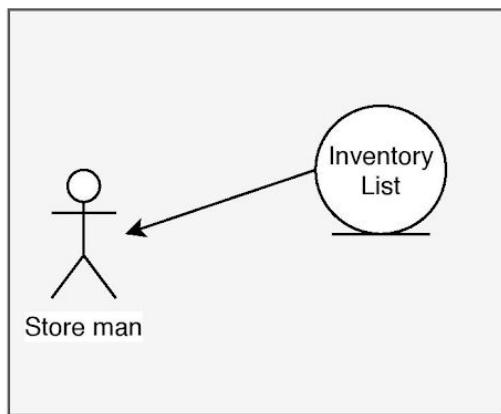
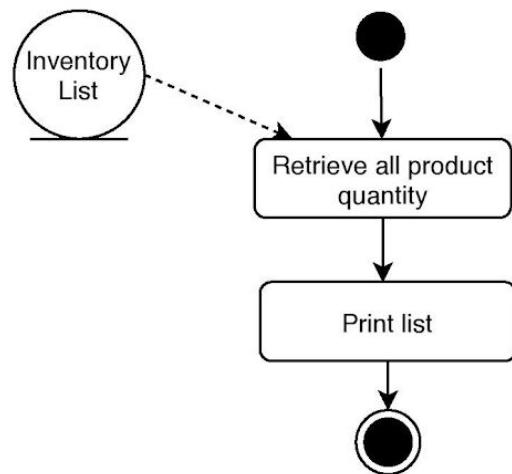
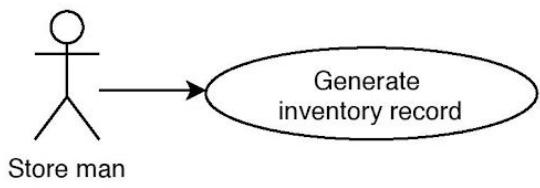




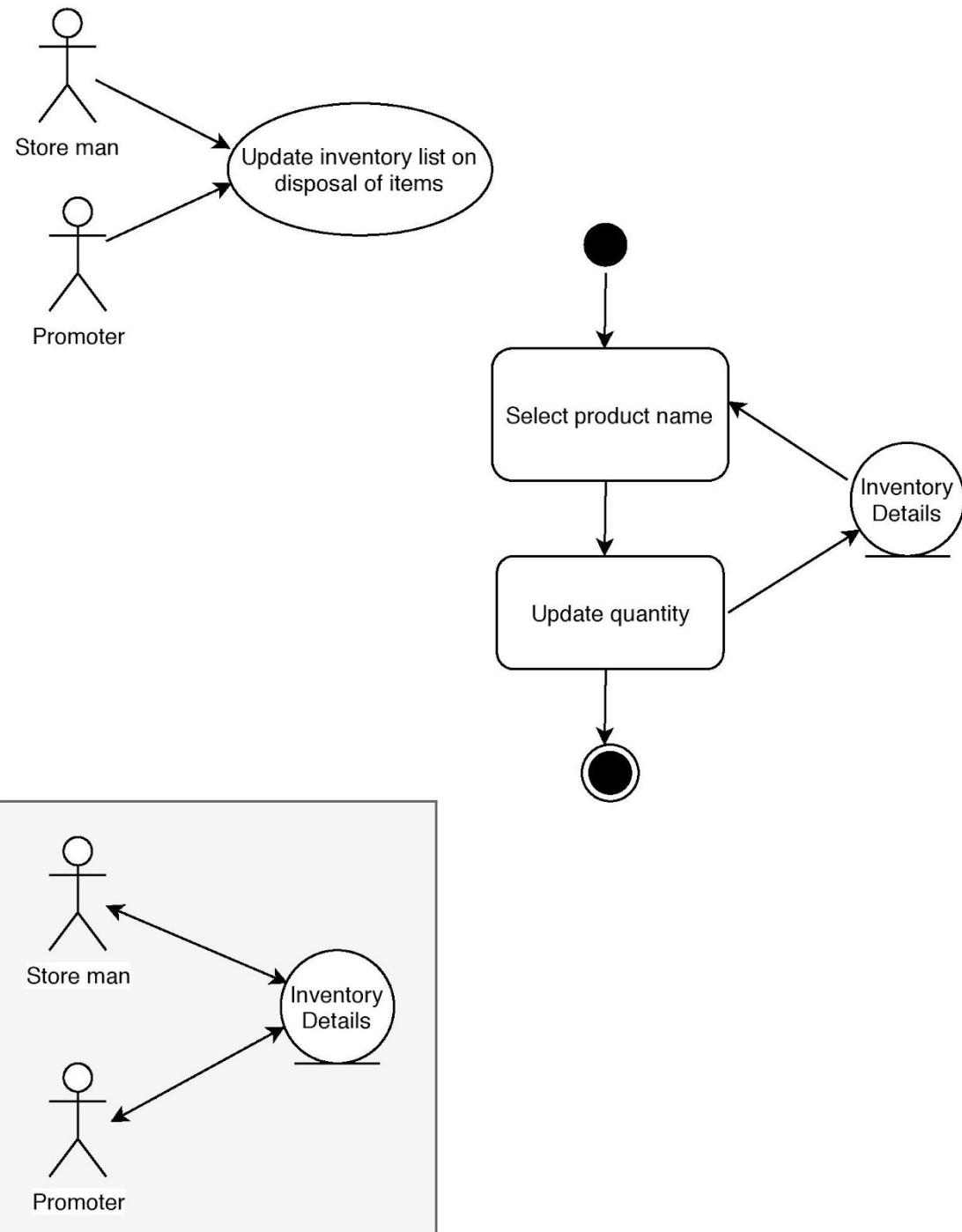


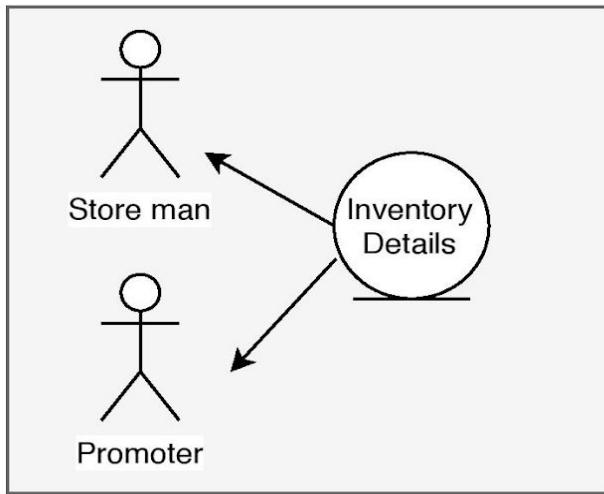
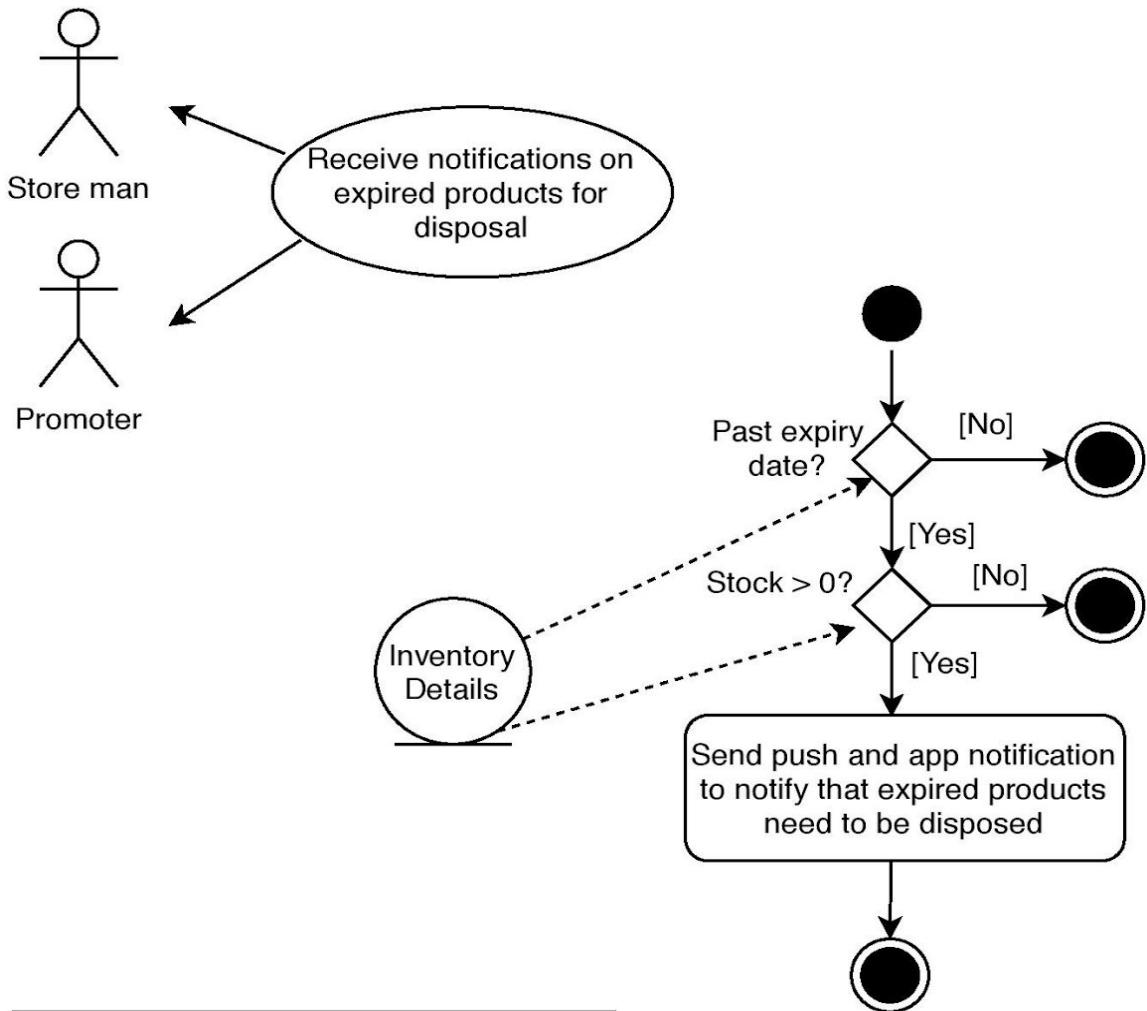




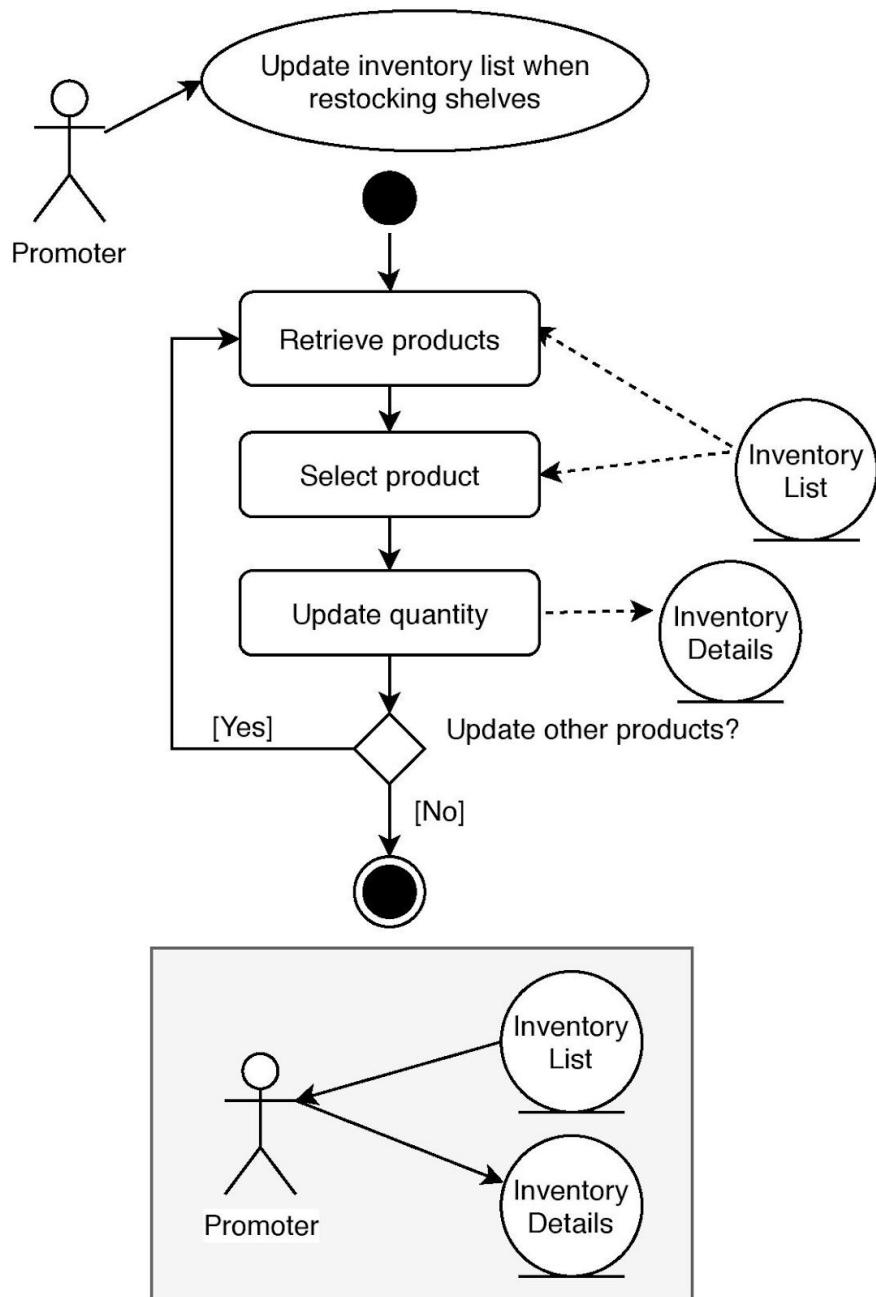


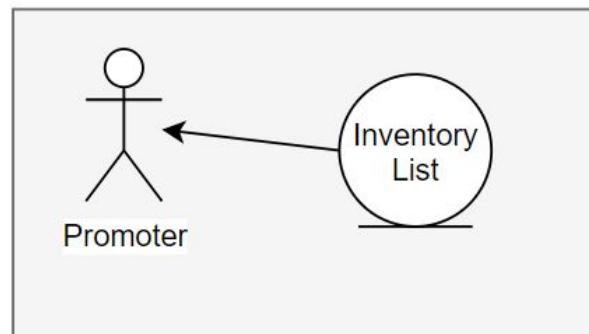
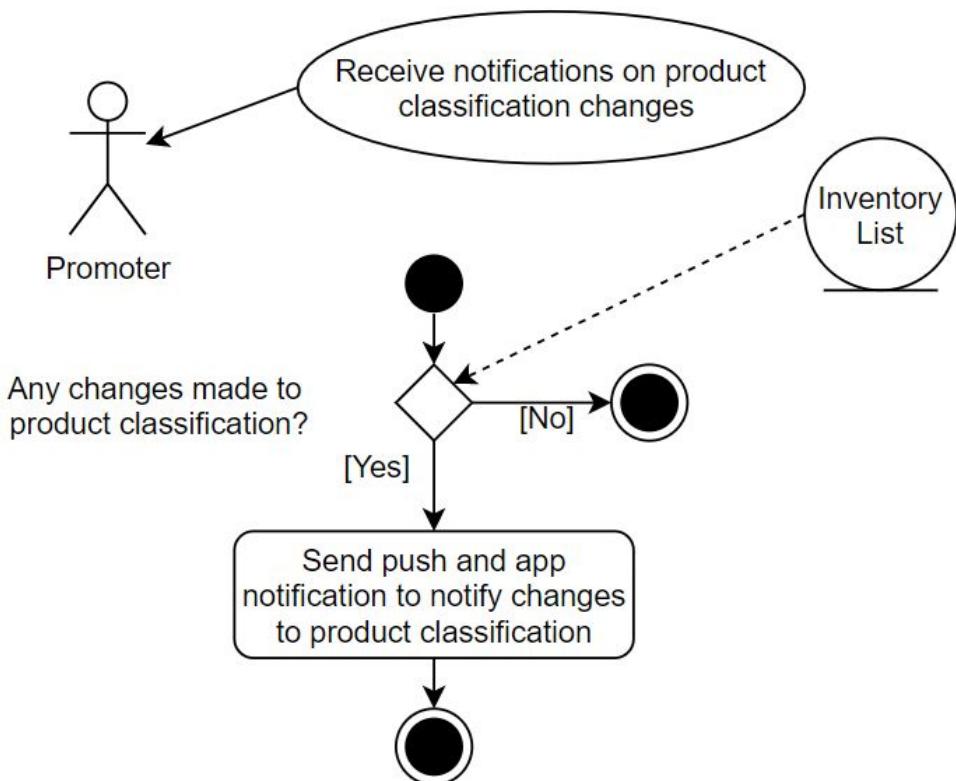
6.3 Store Man & Promoter

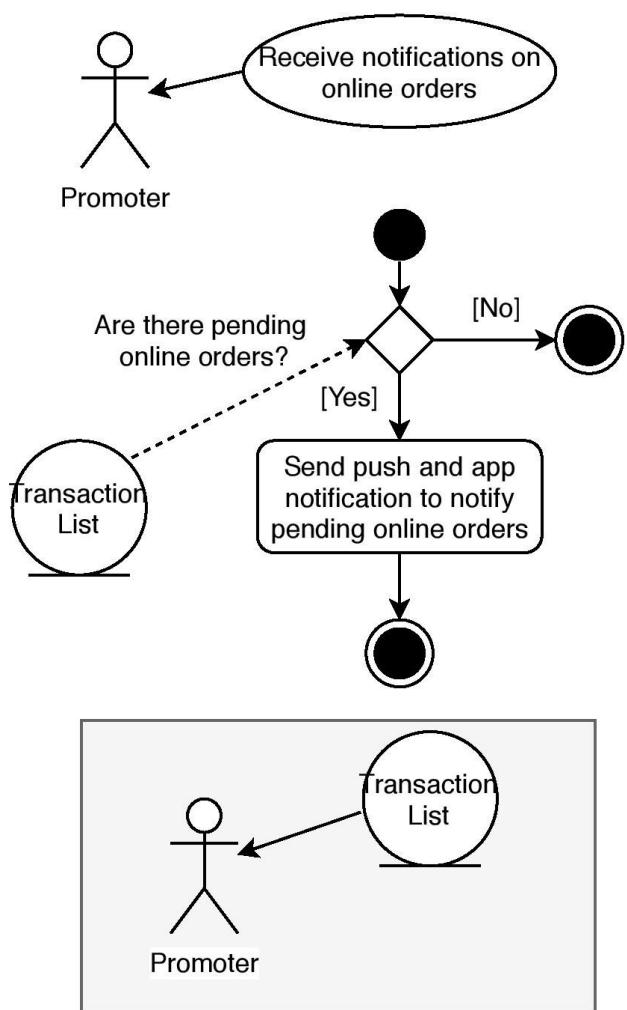


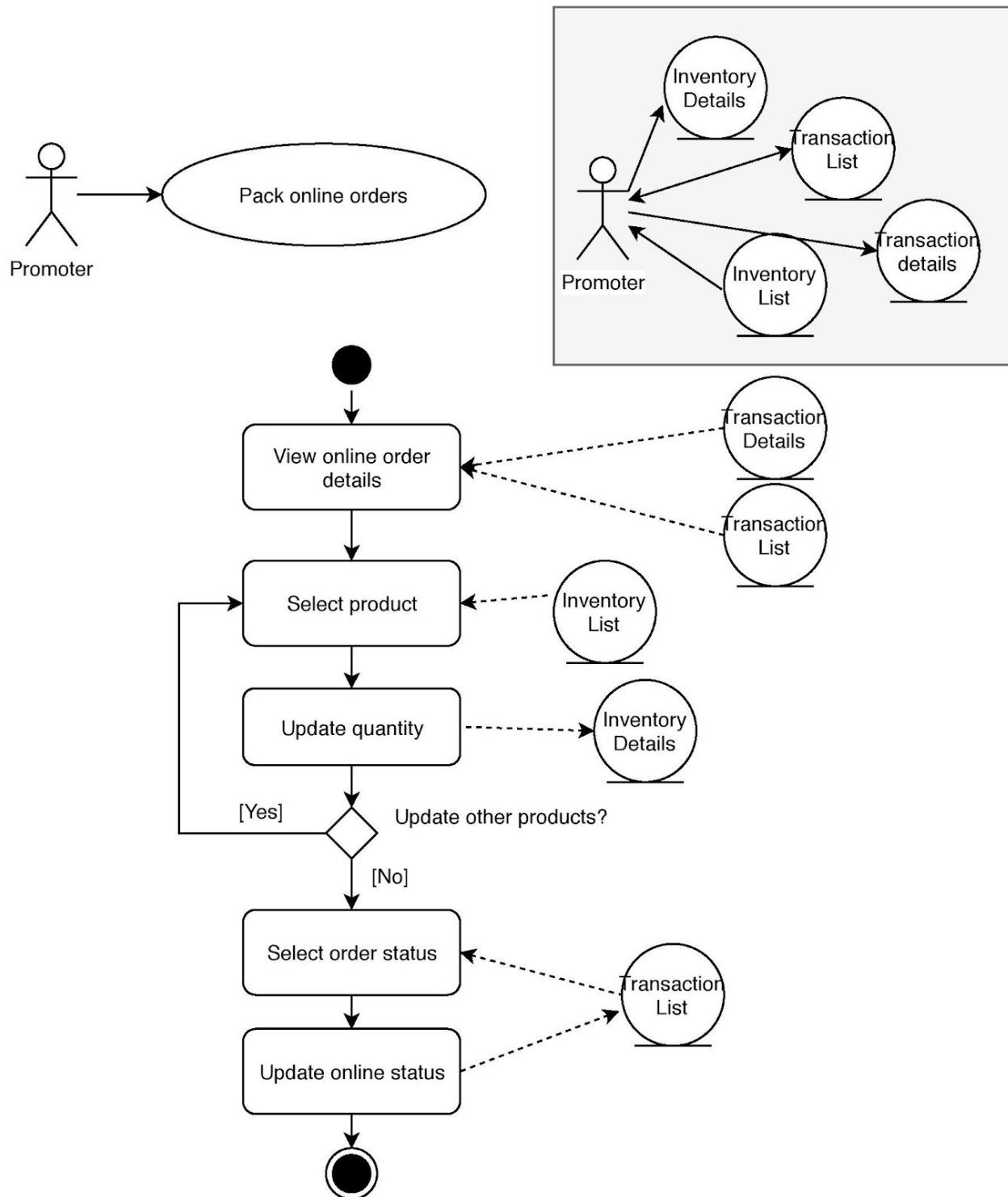


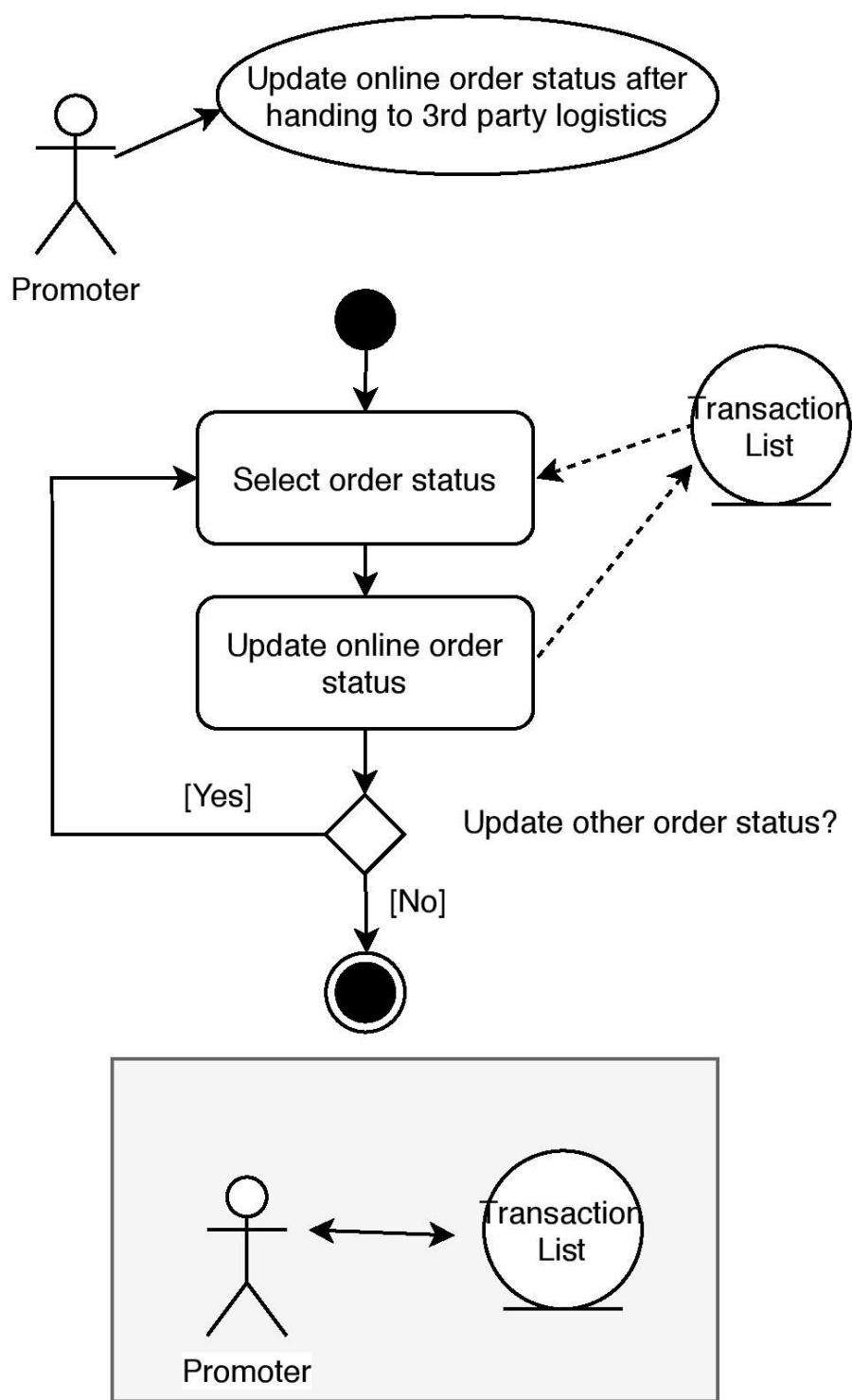
6.4 Promoter



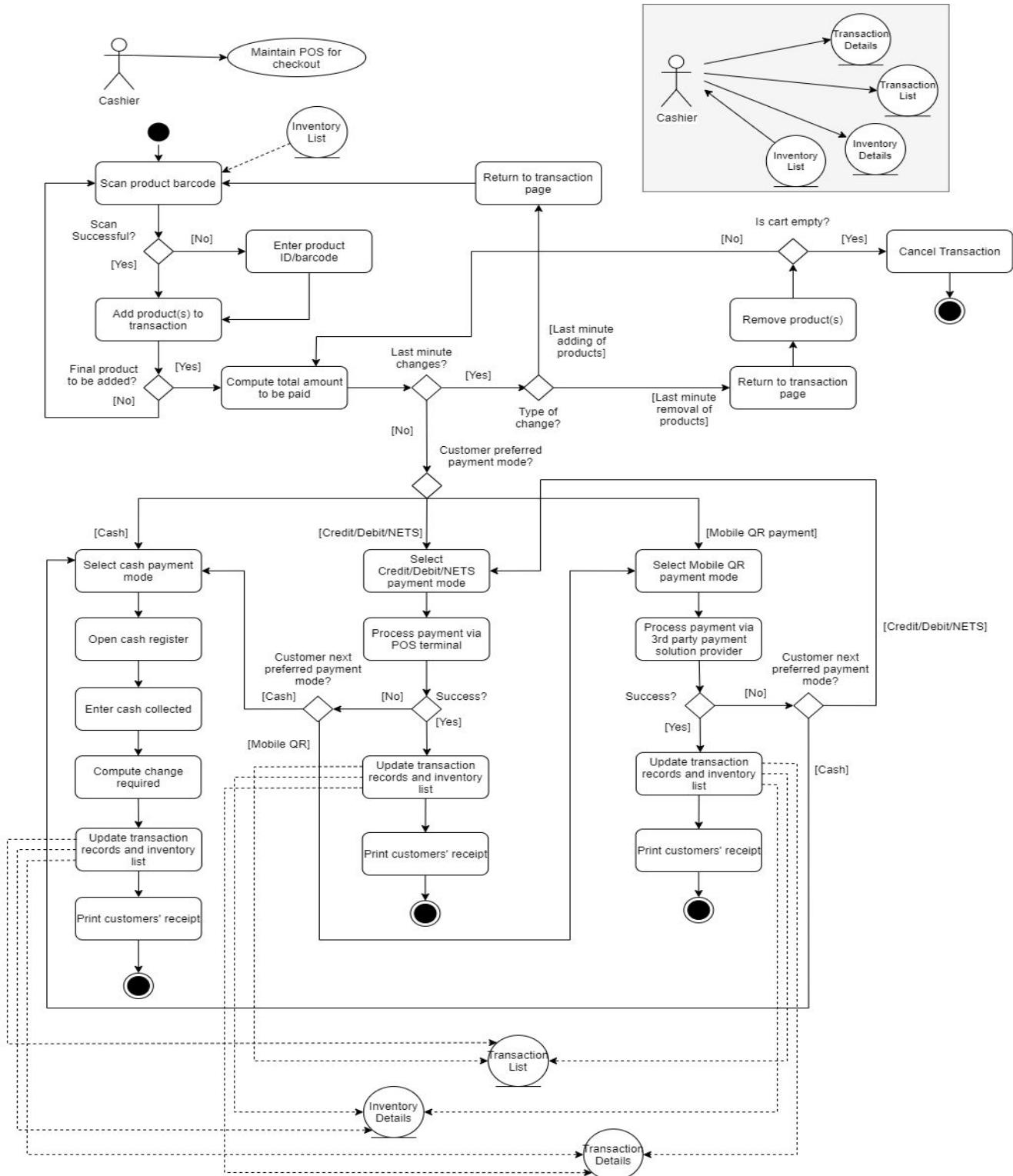


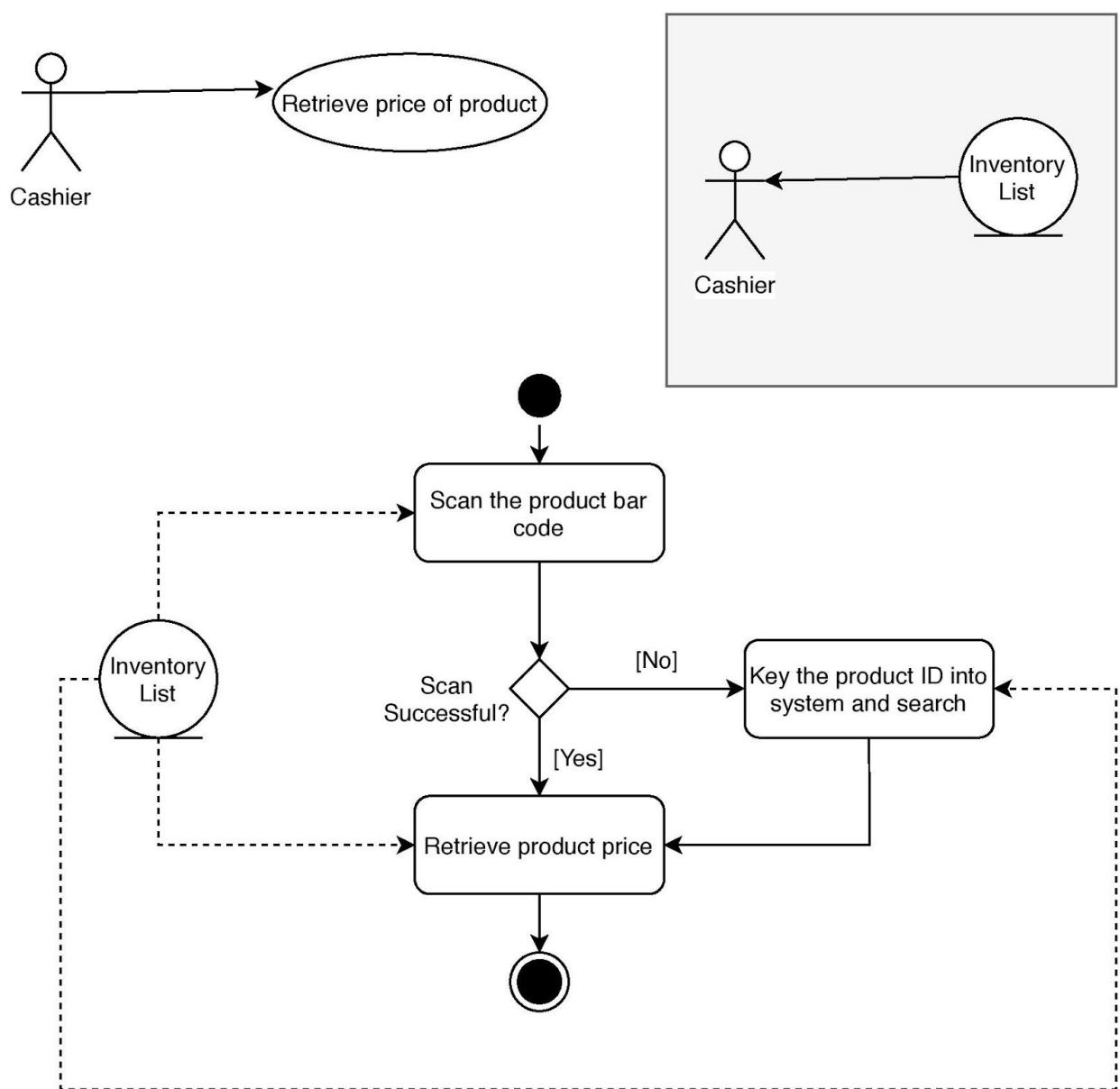


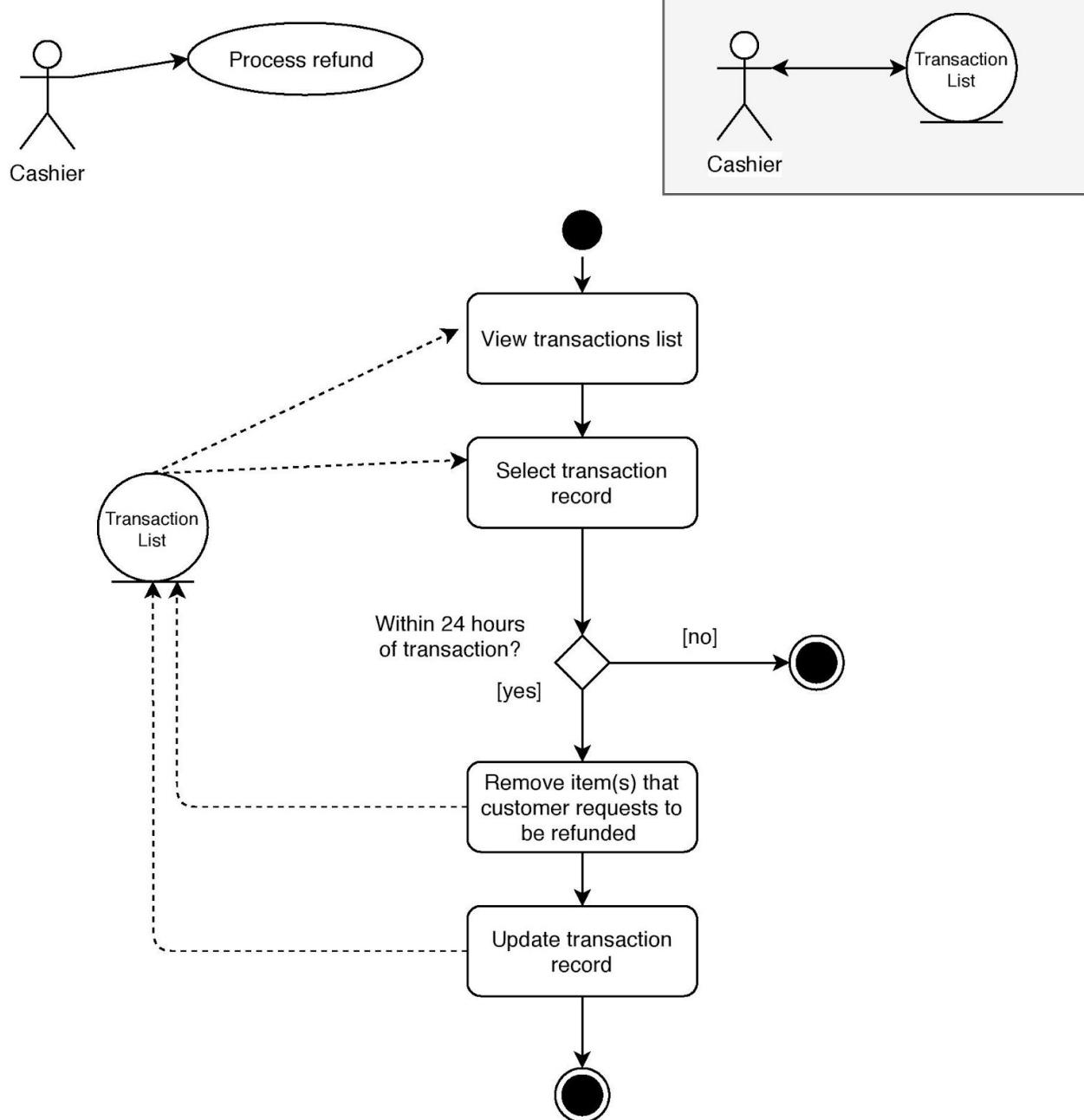


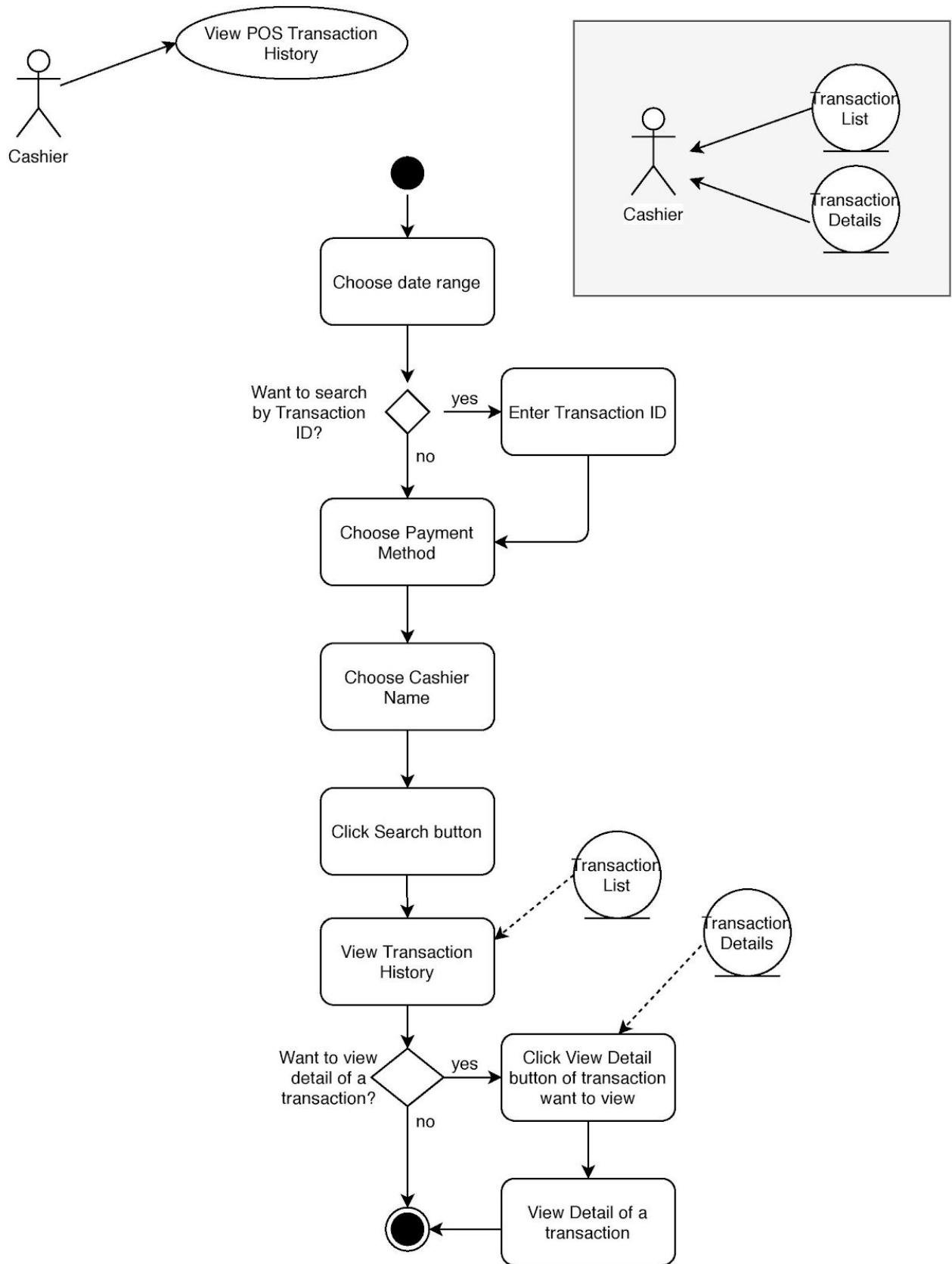


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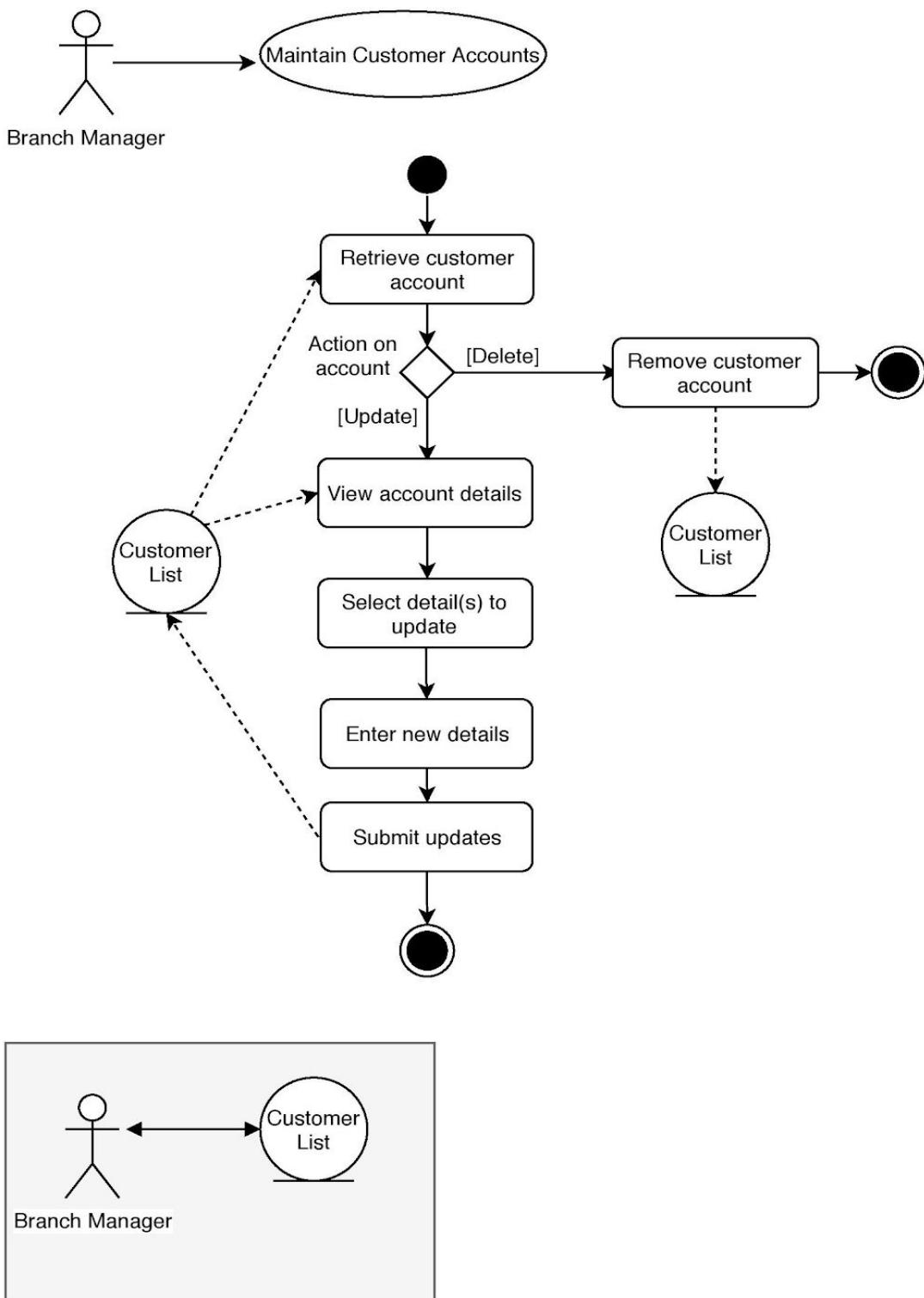


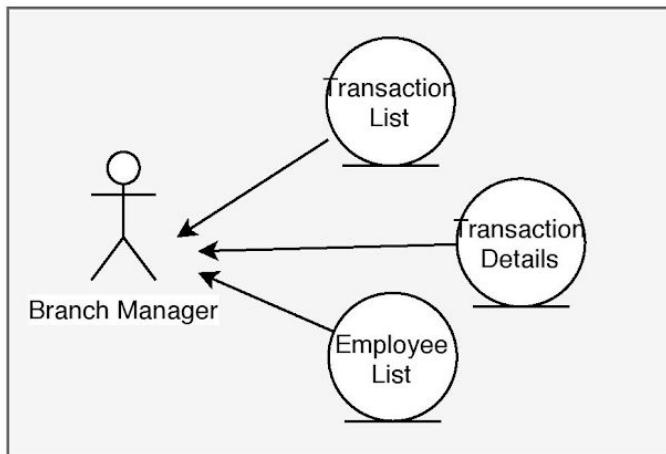
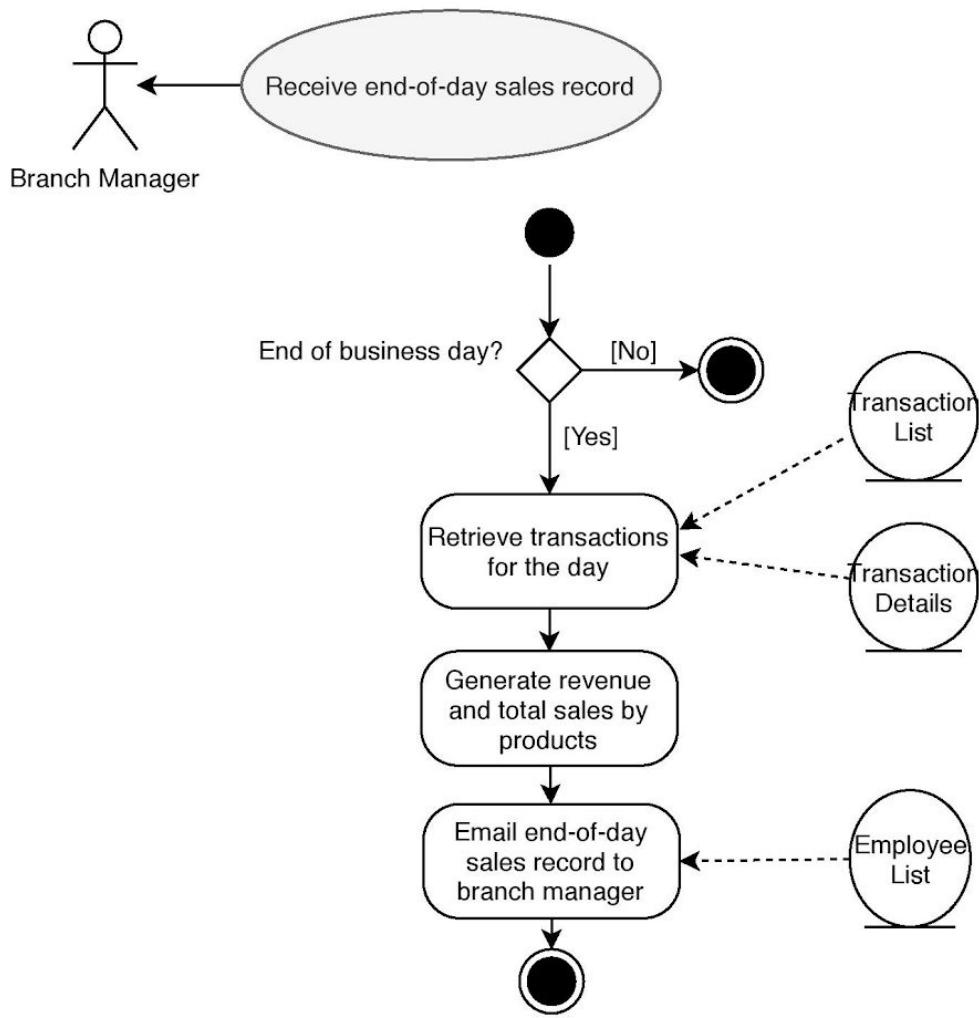


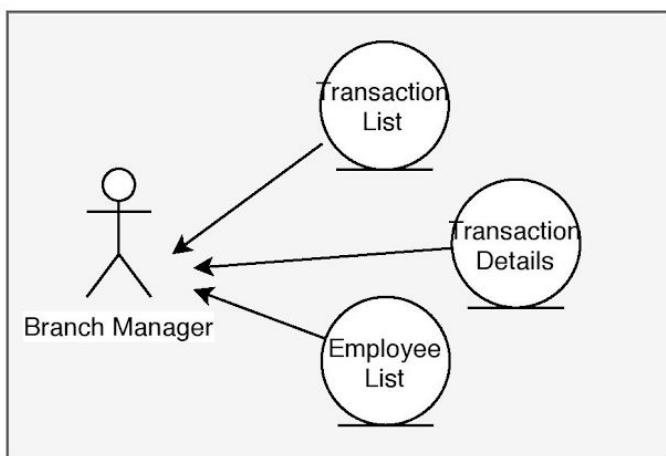
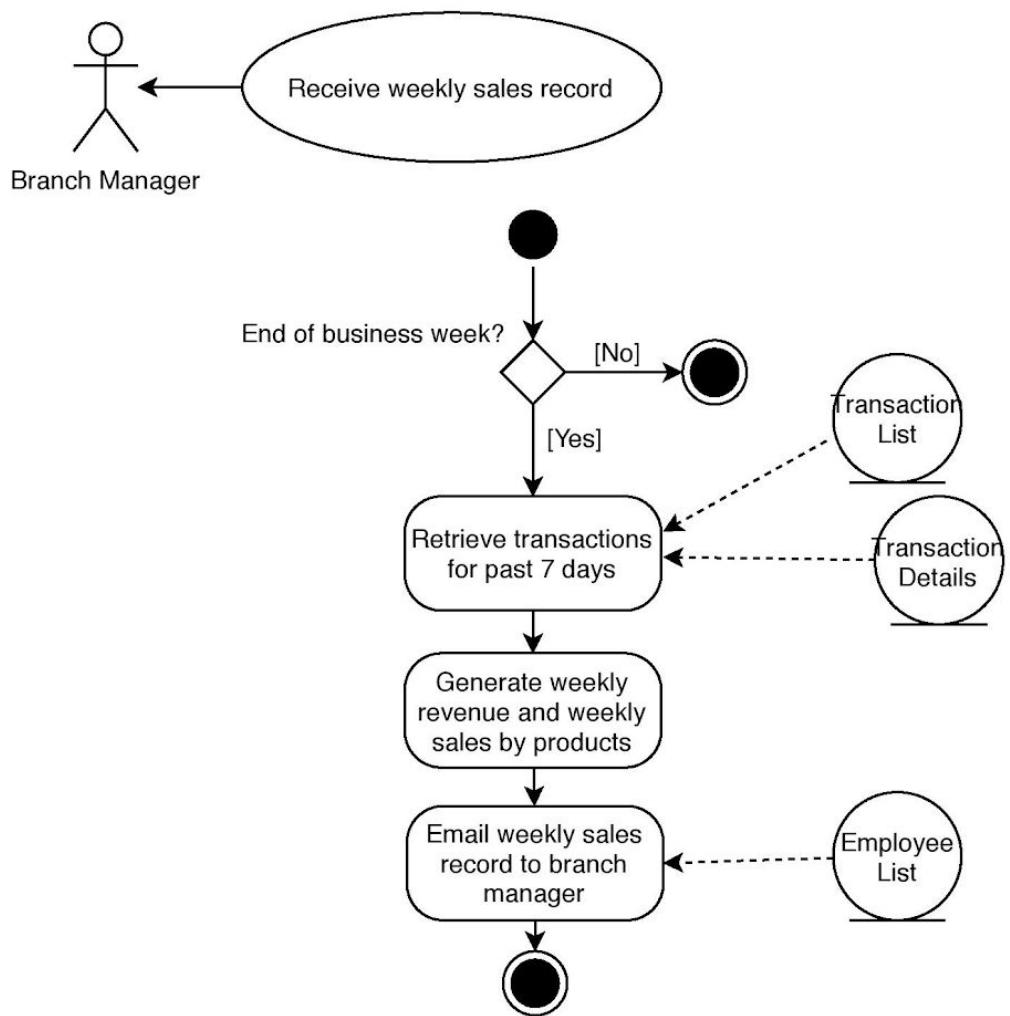


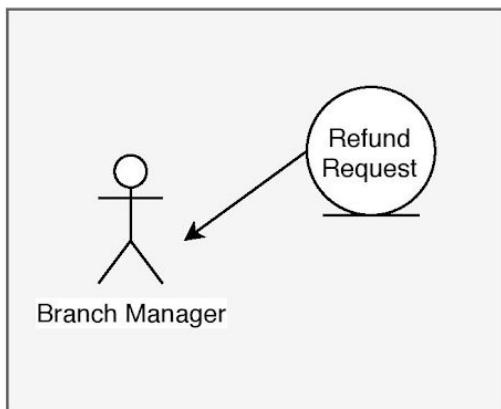
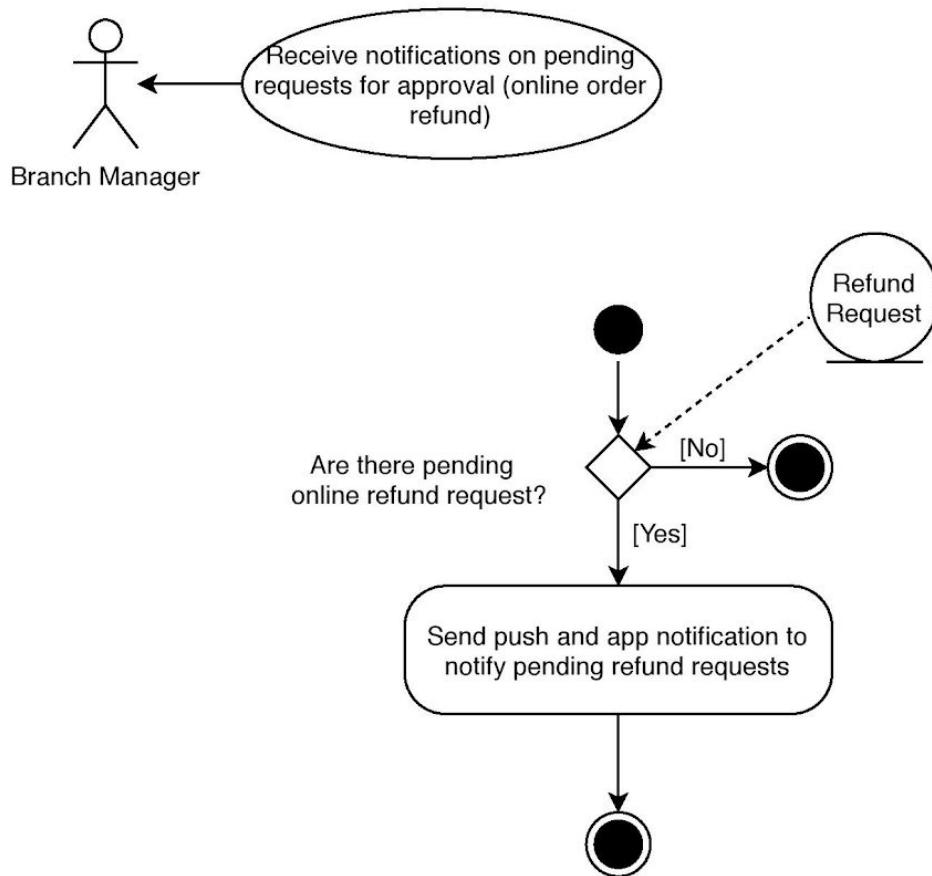


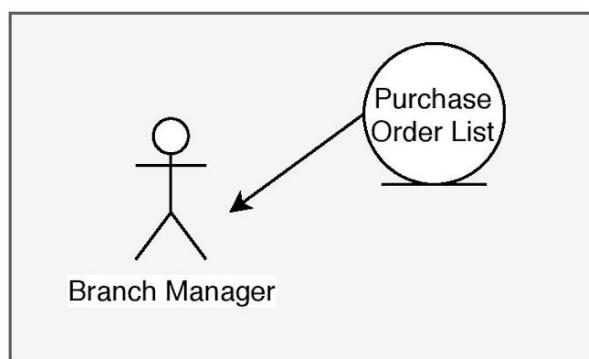
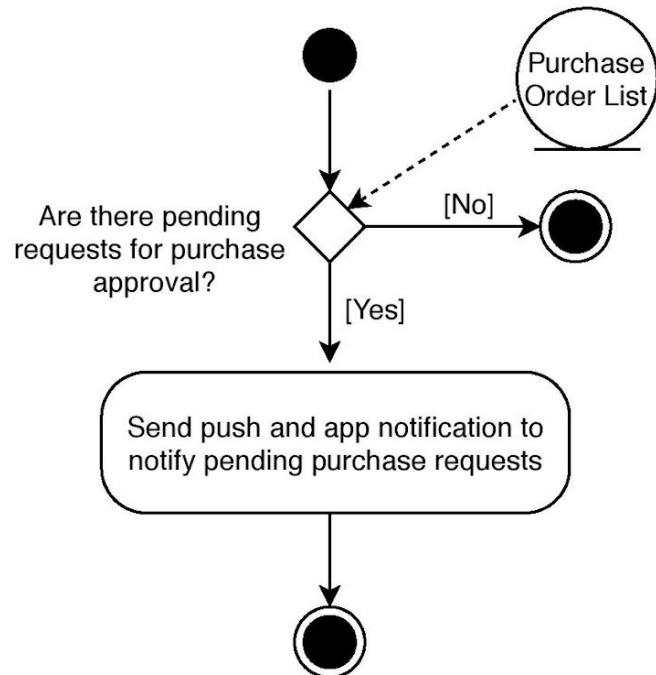
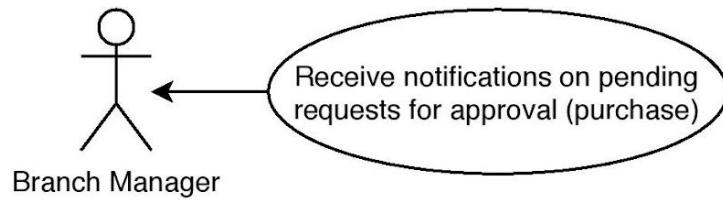
6.6 Branch Manager

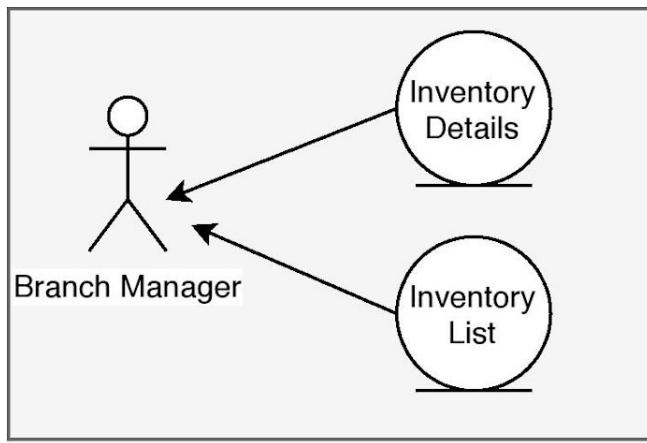
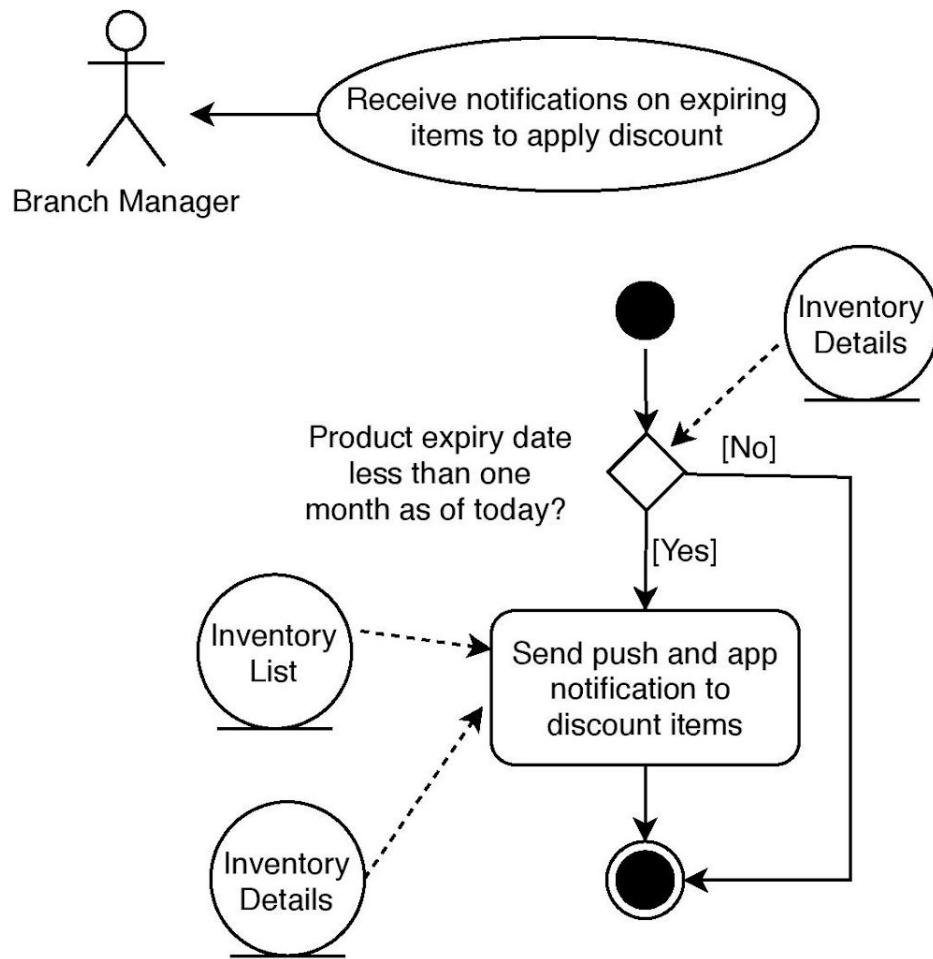


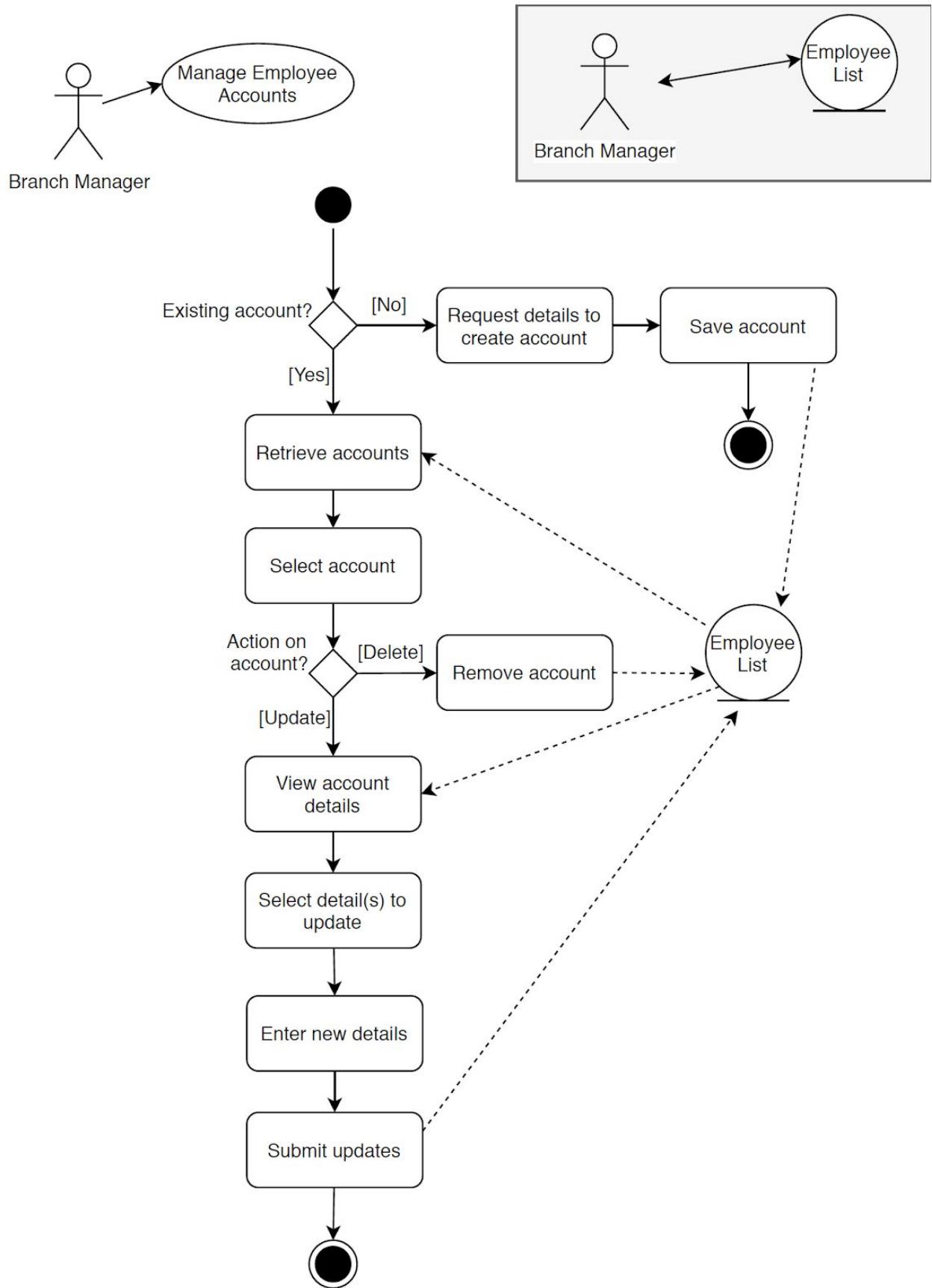


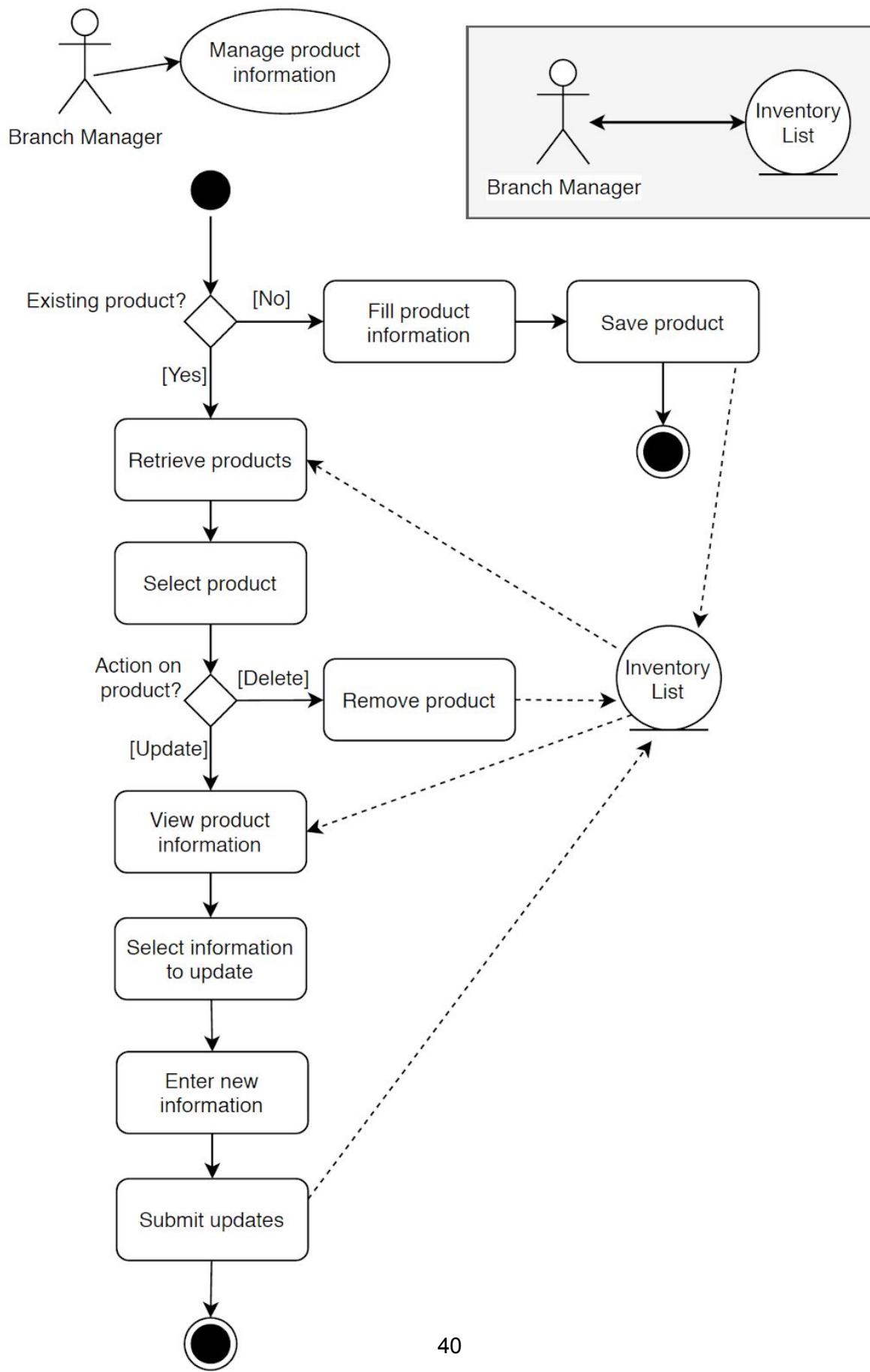


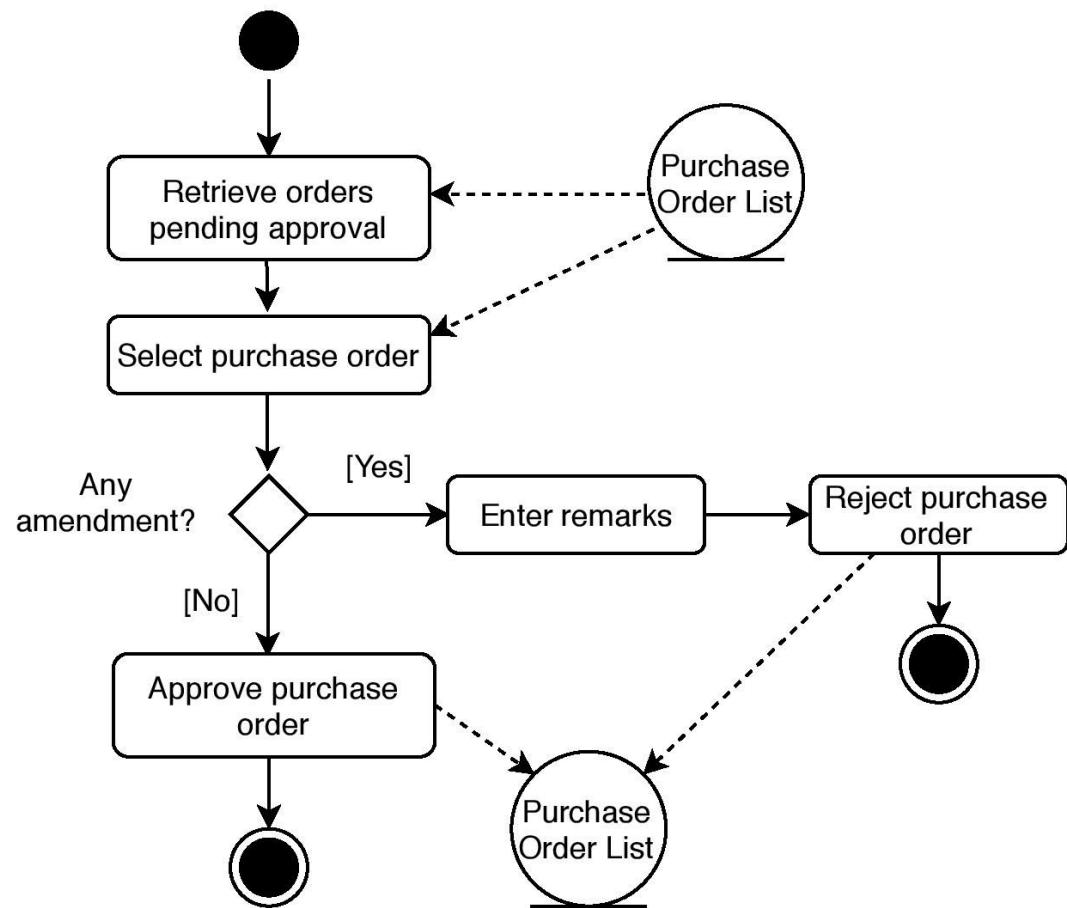
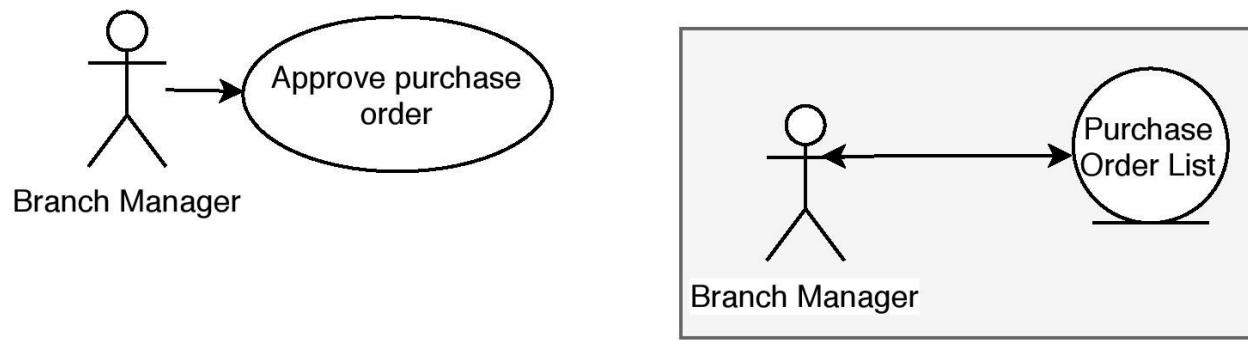


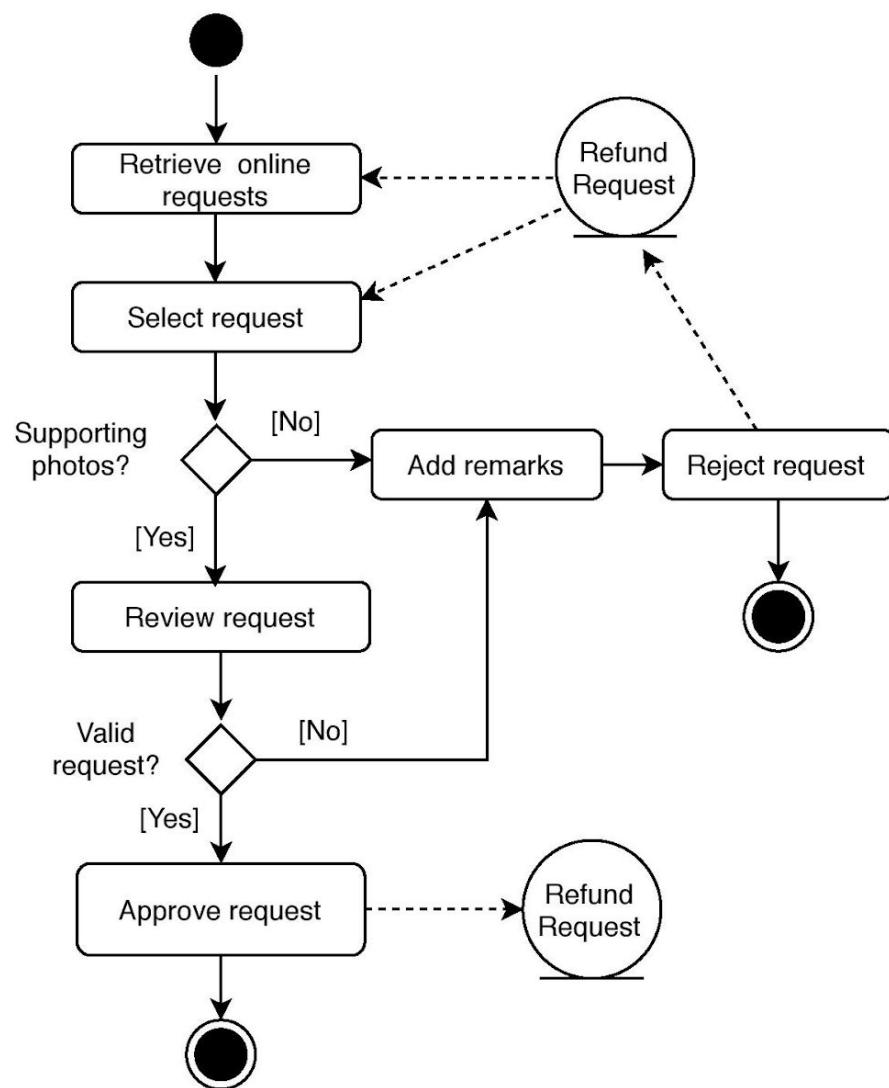
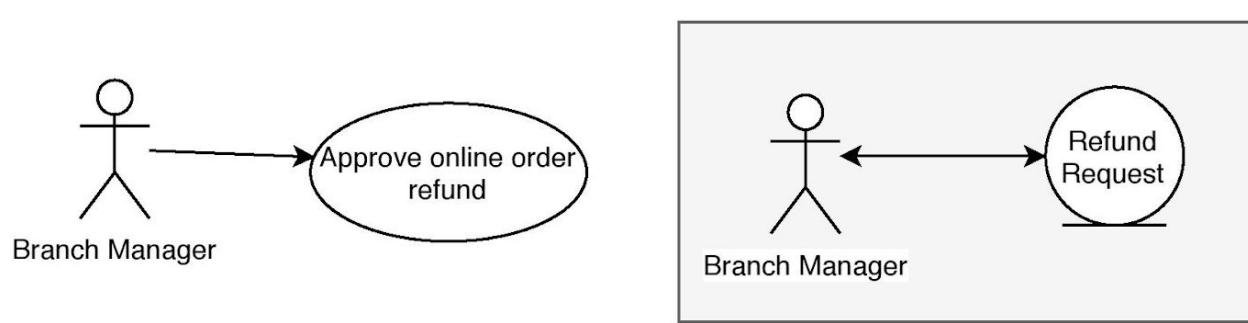




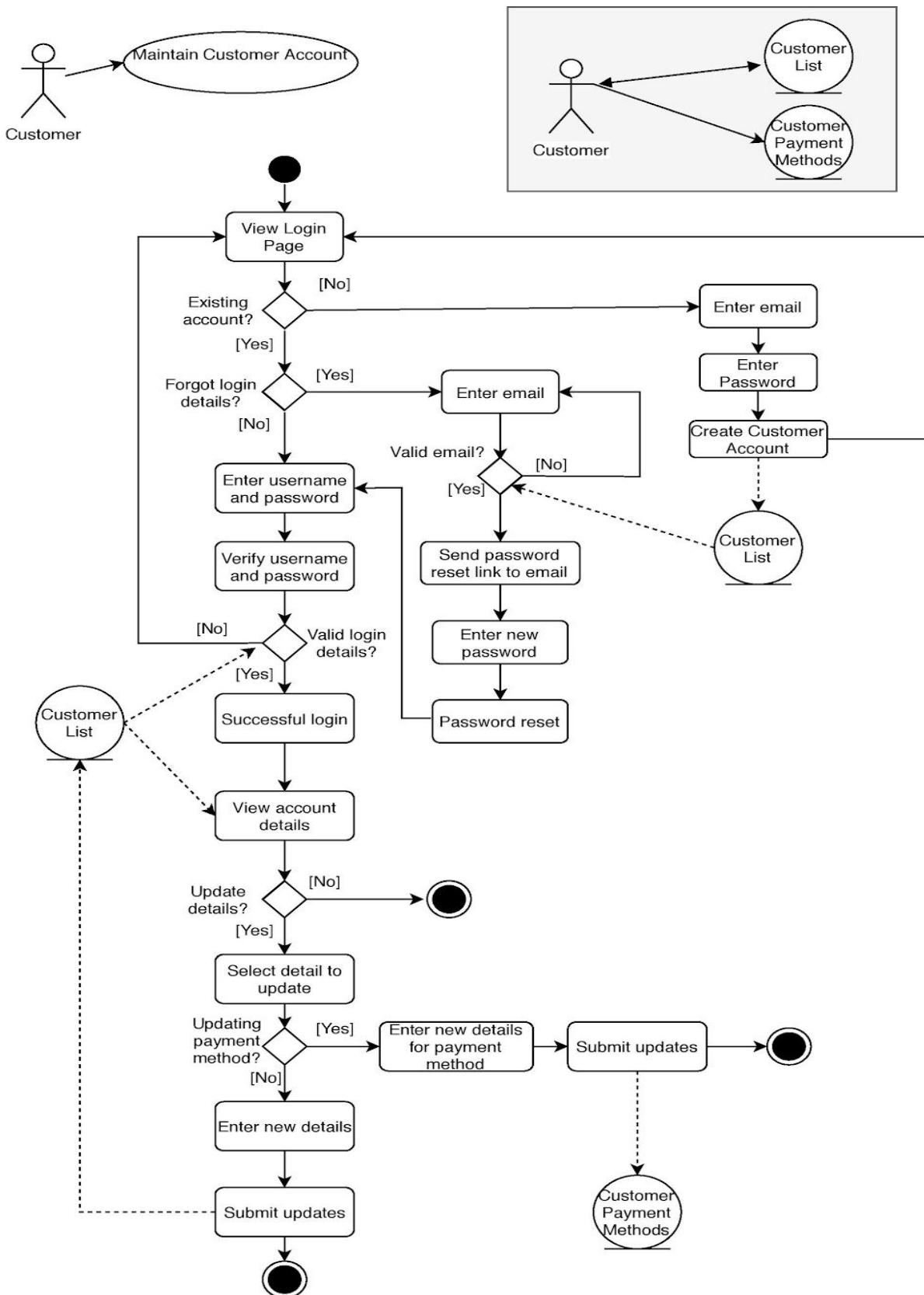


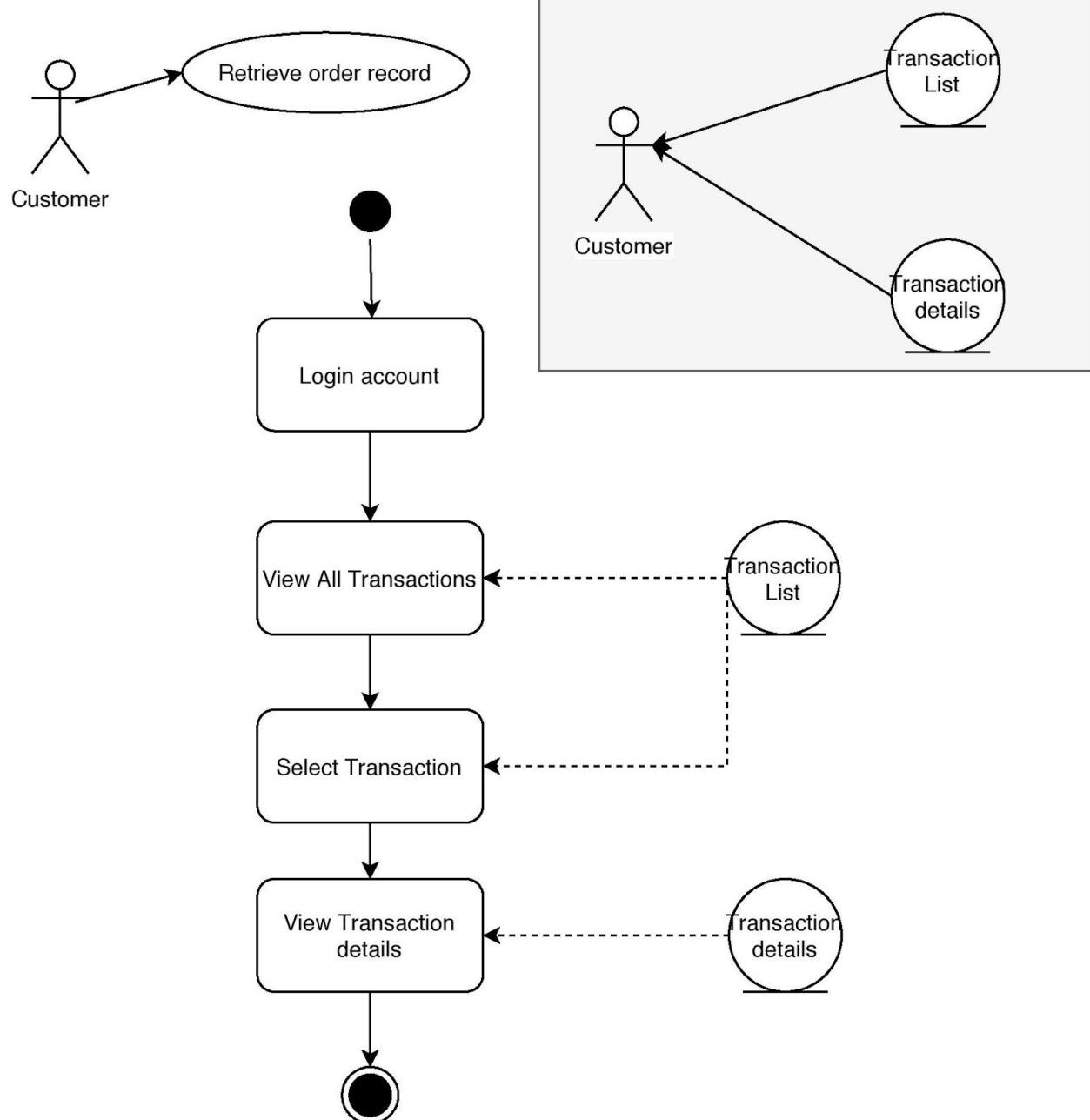


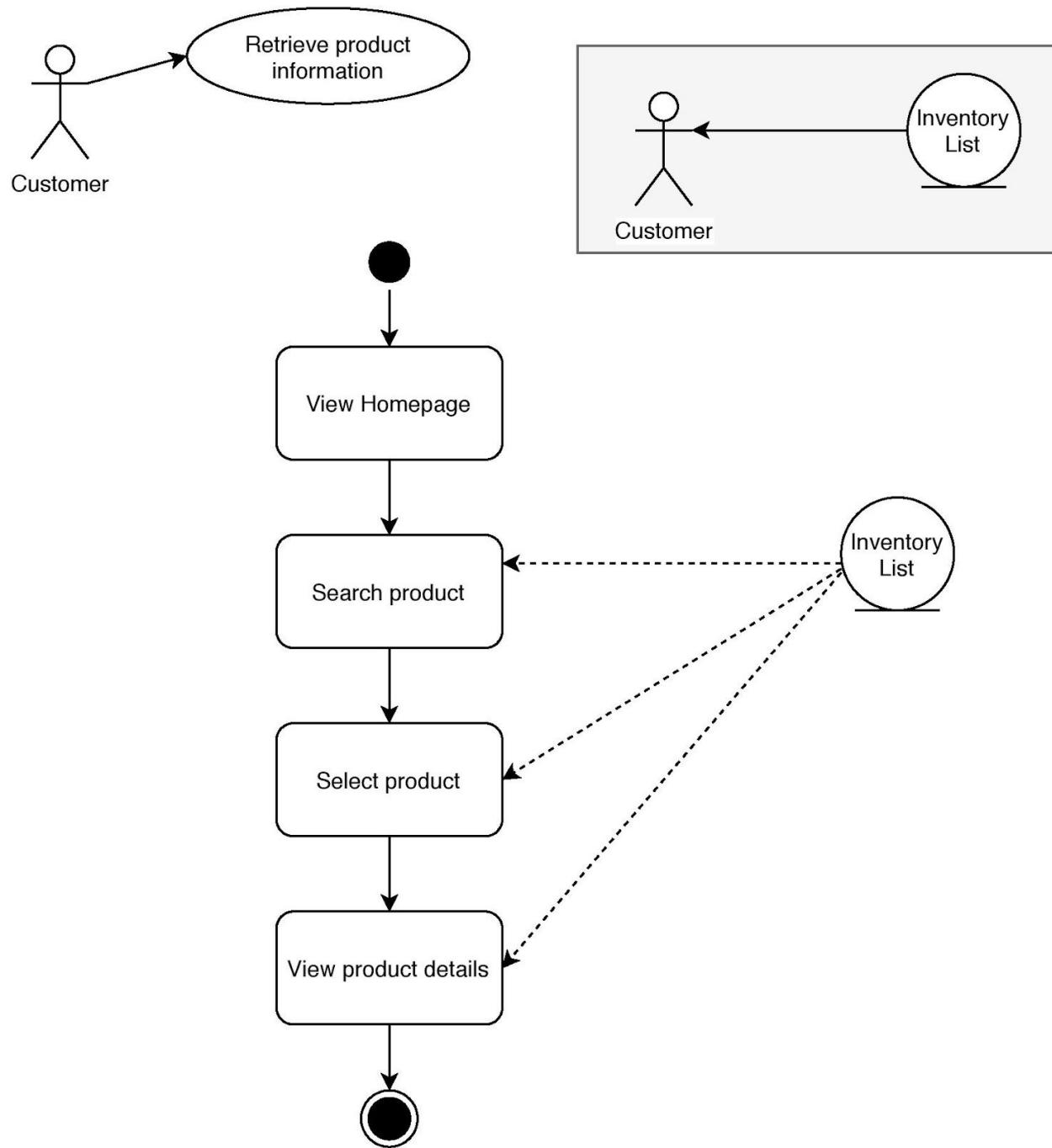


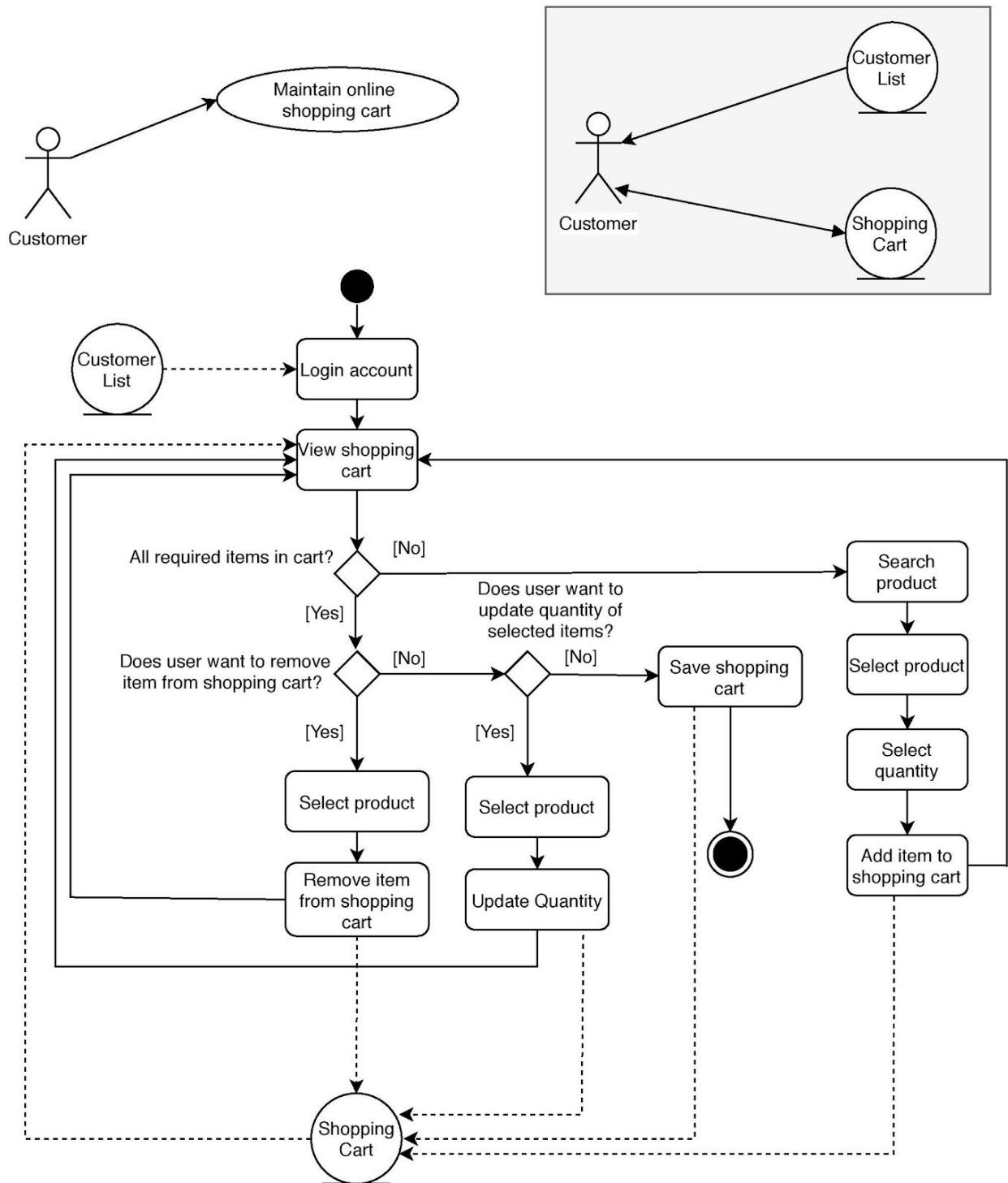


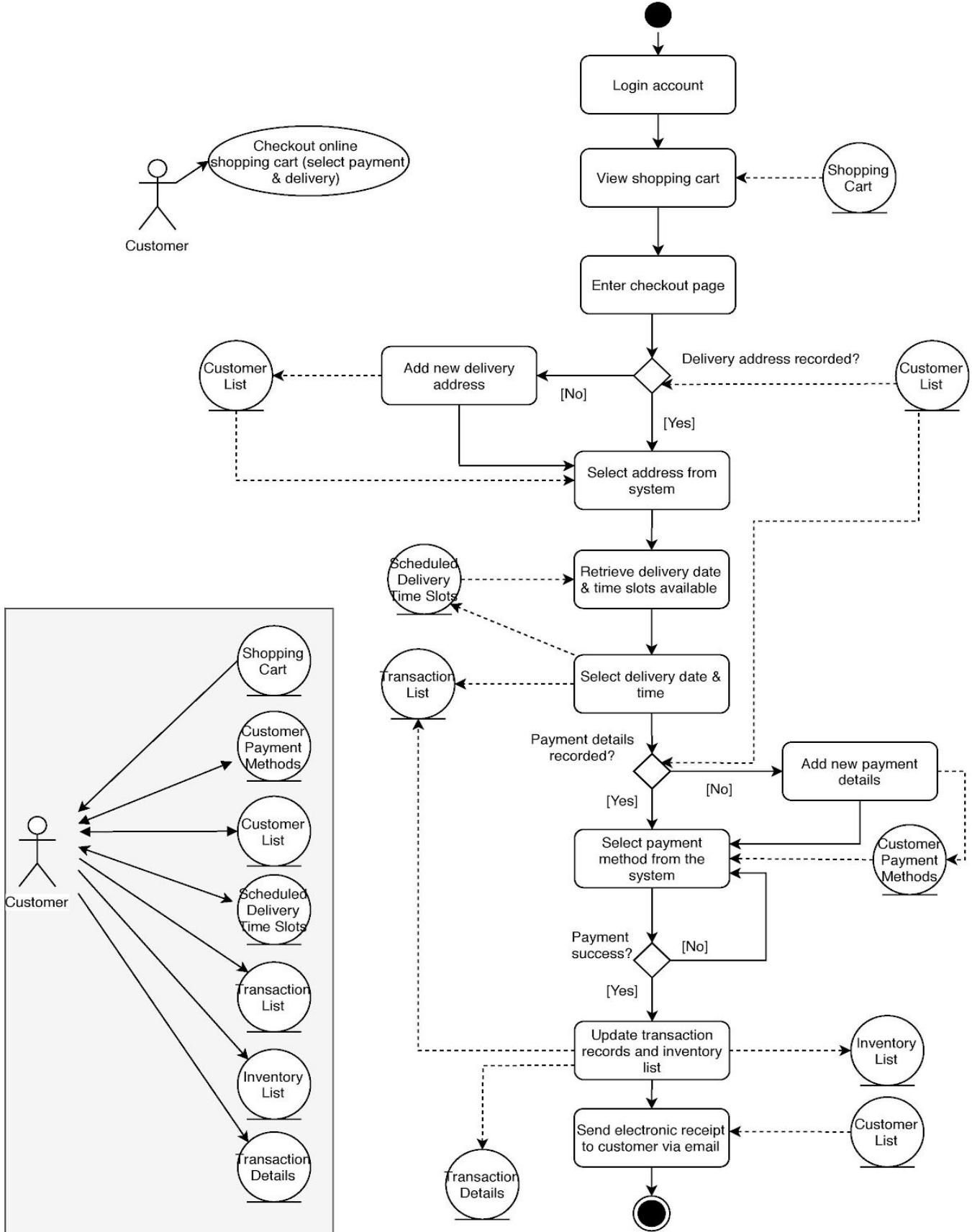
6.7 Customer

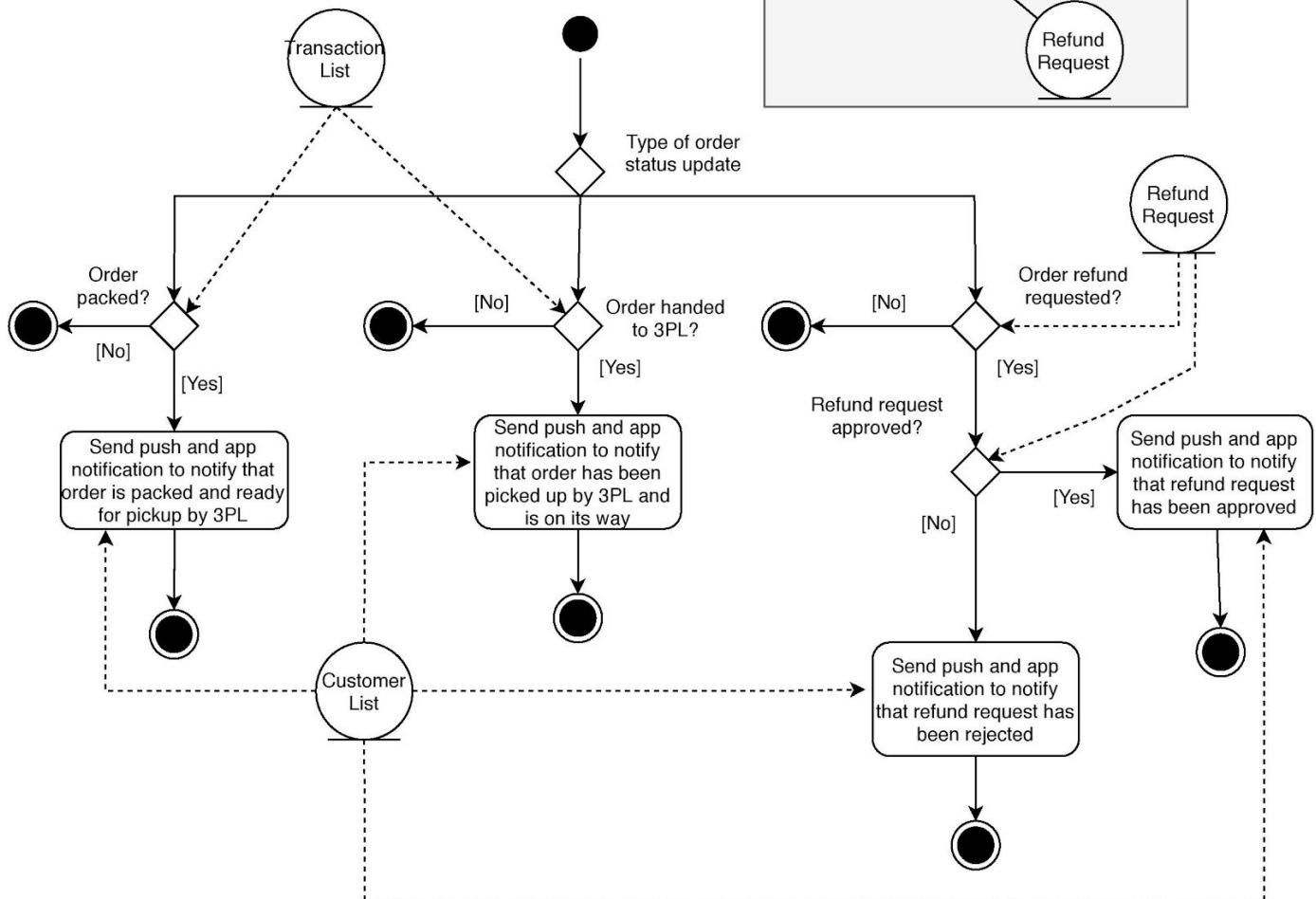
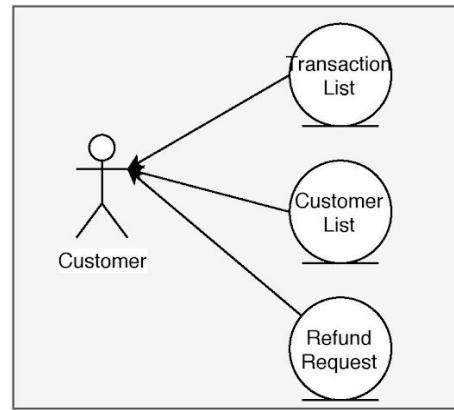
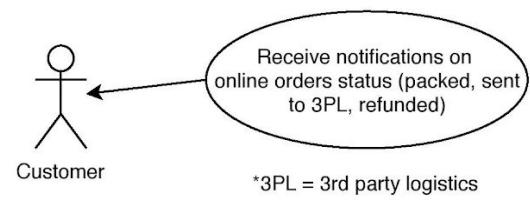


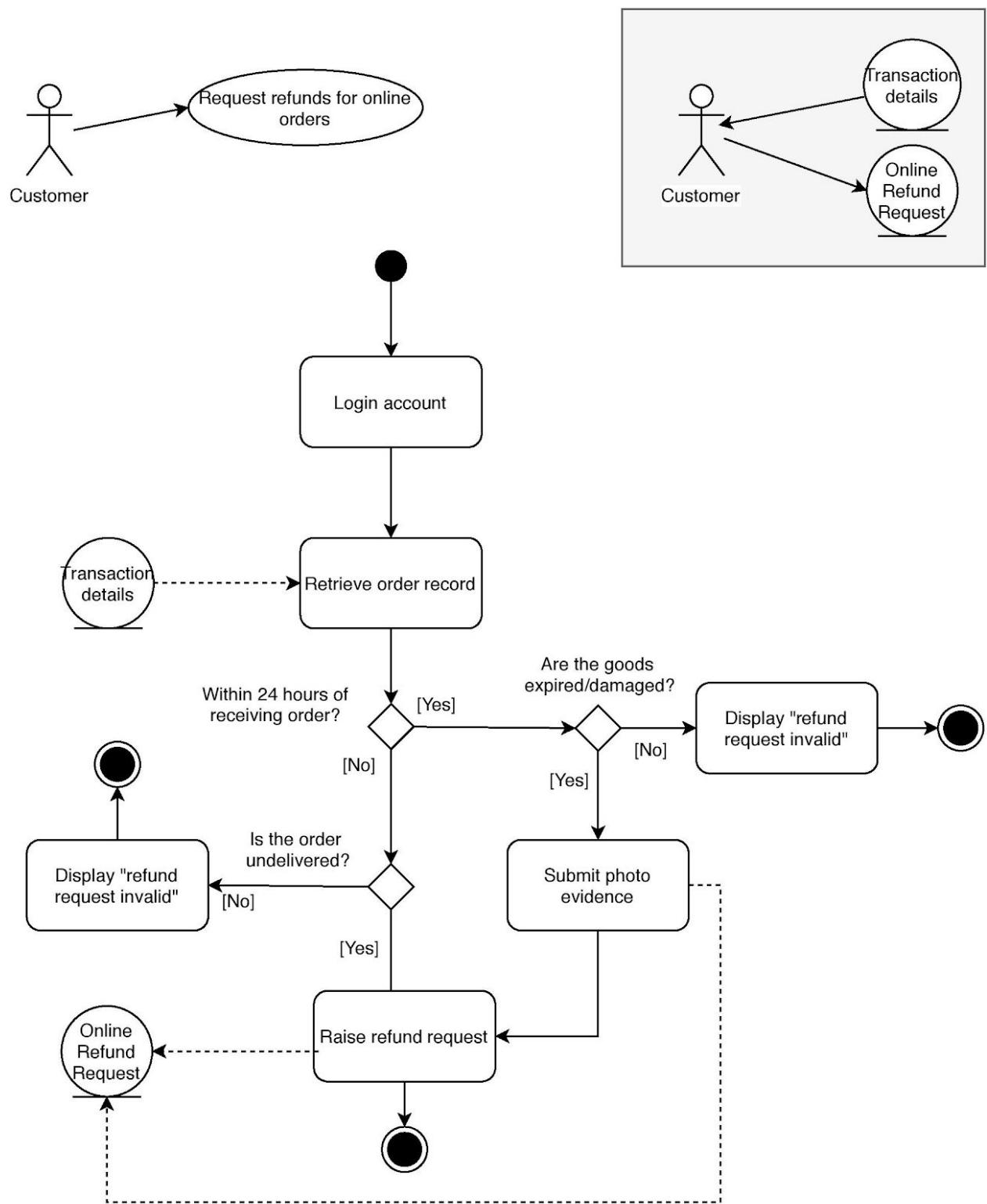


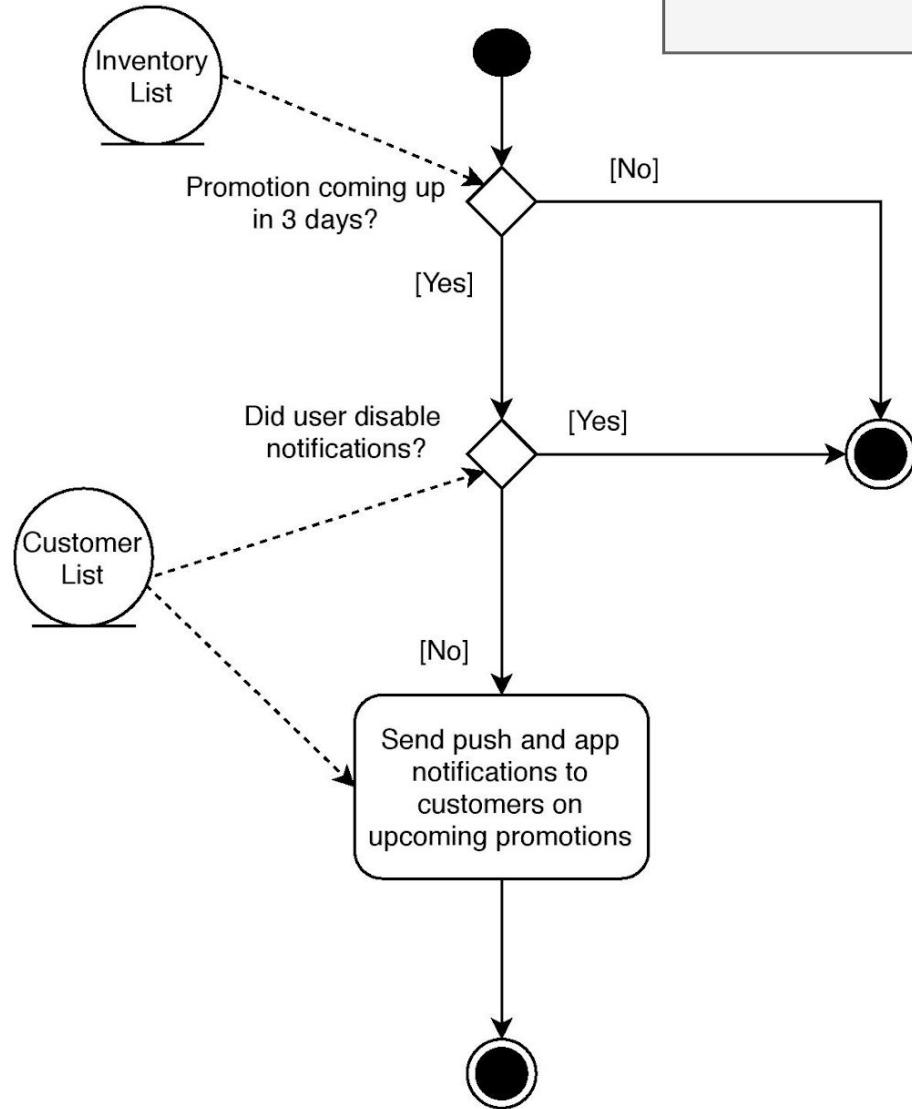
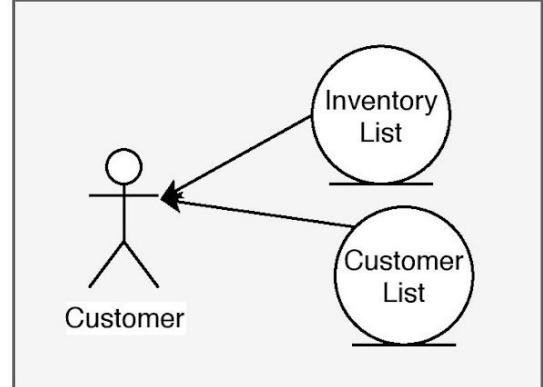
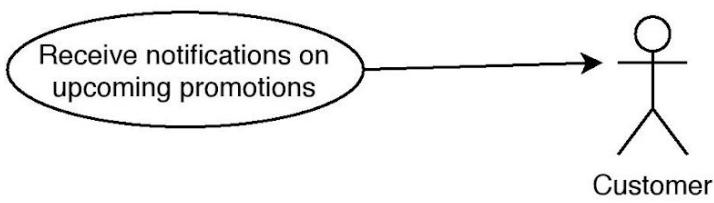


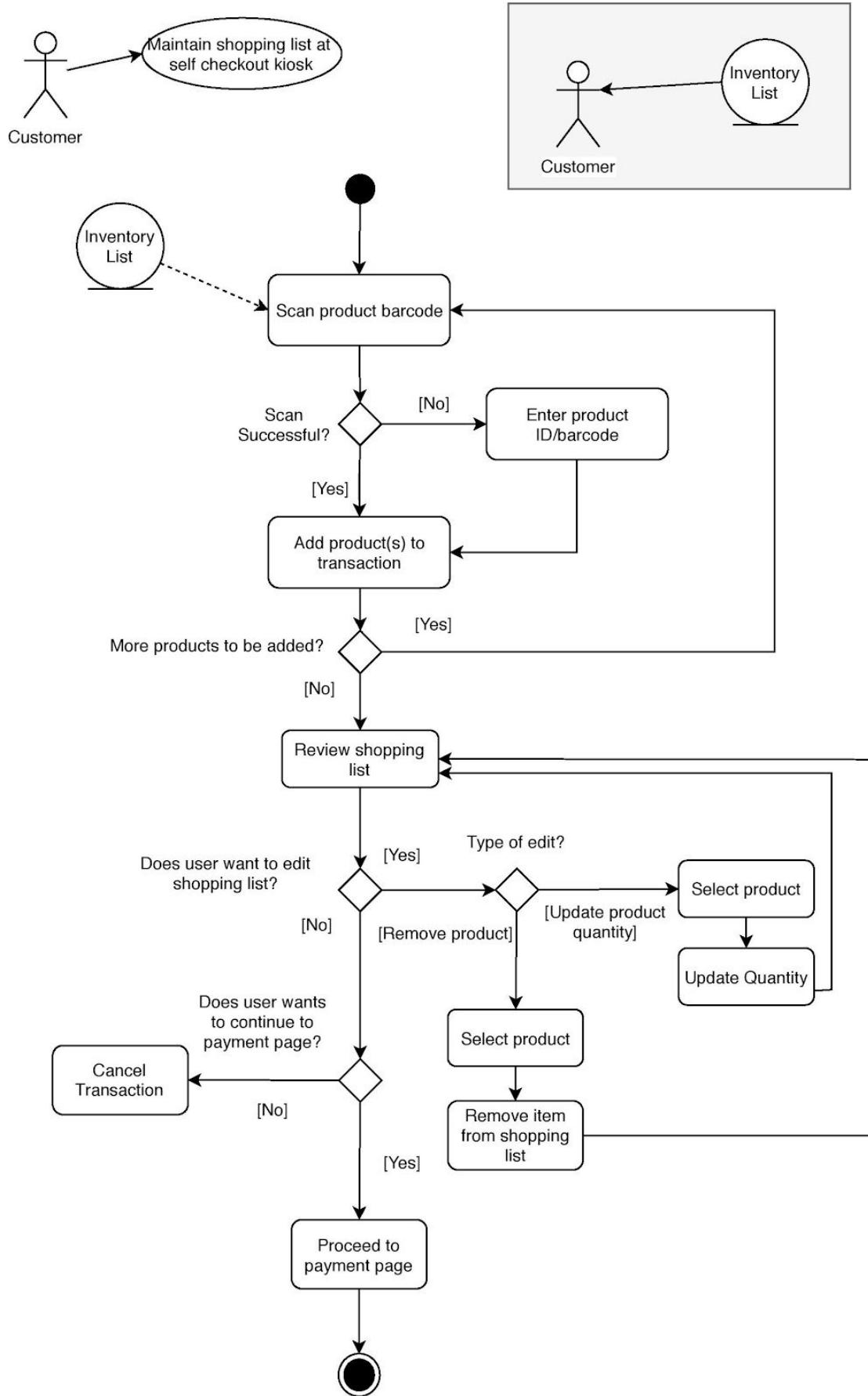


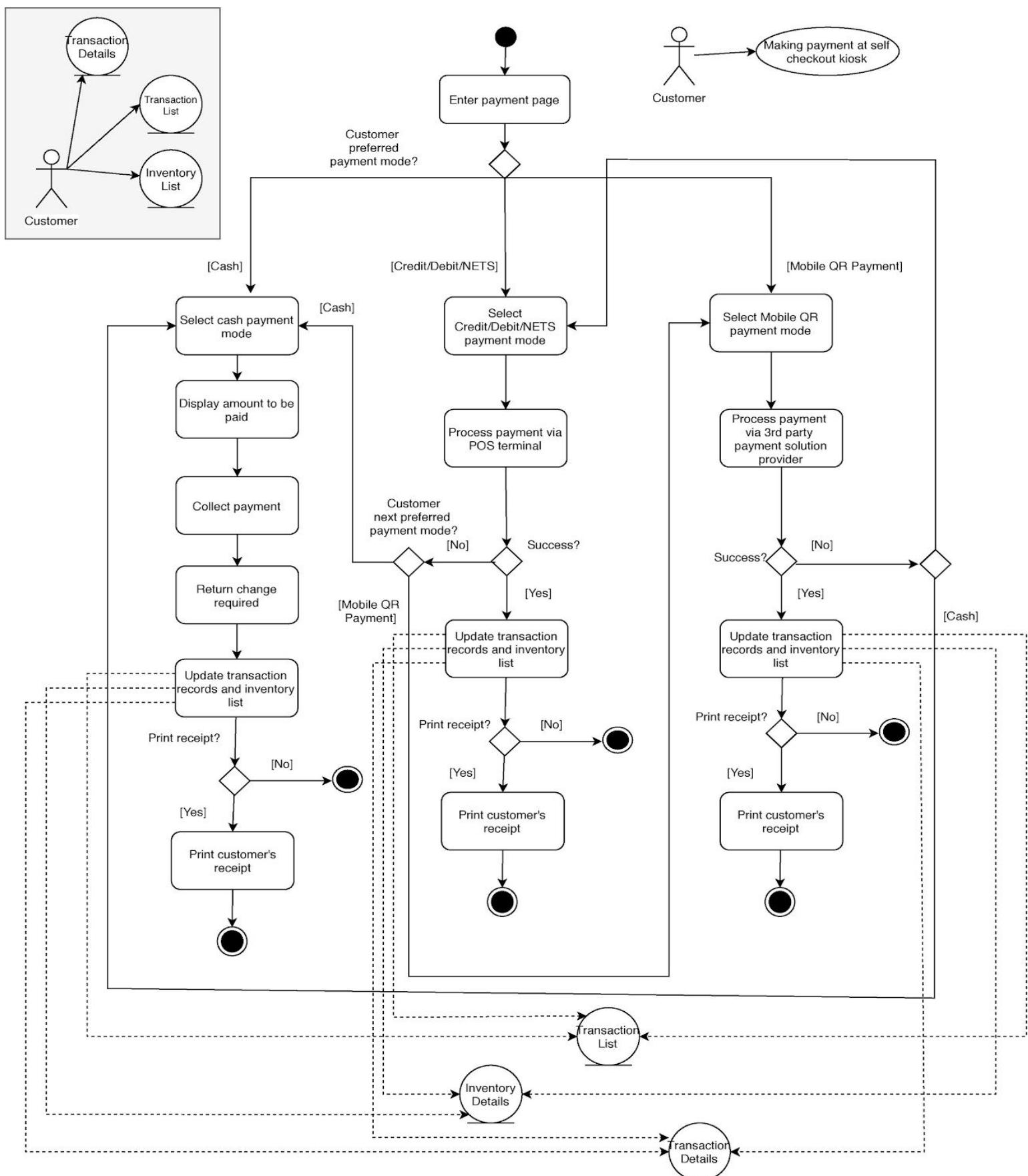






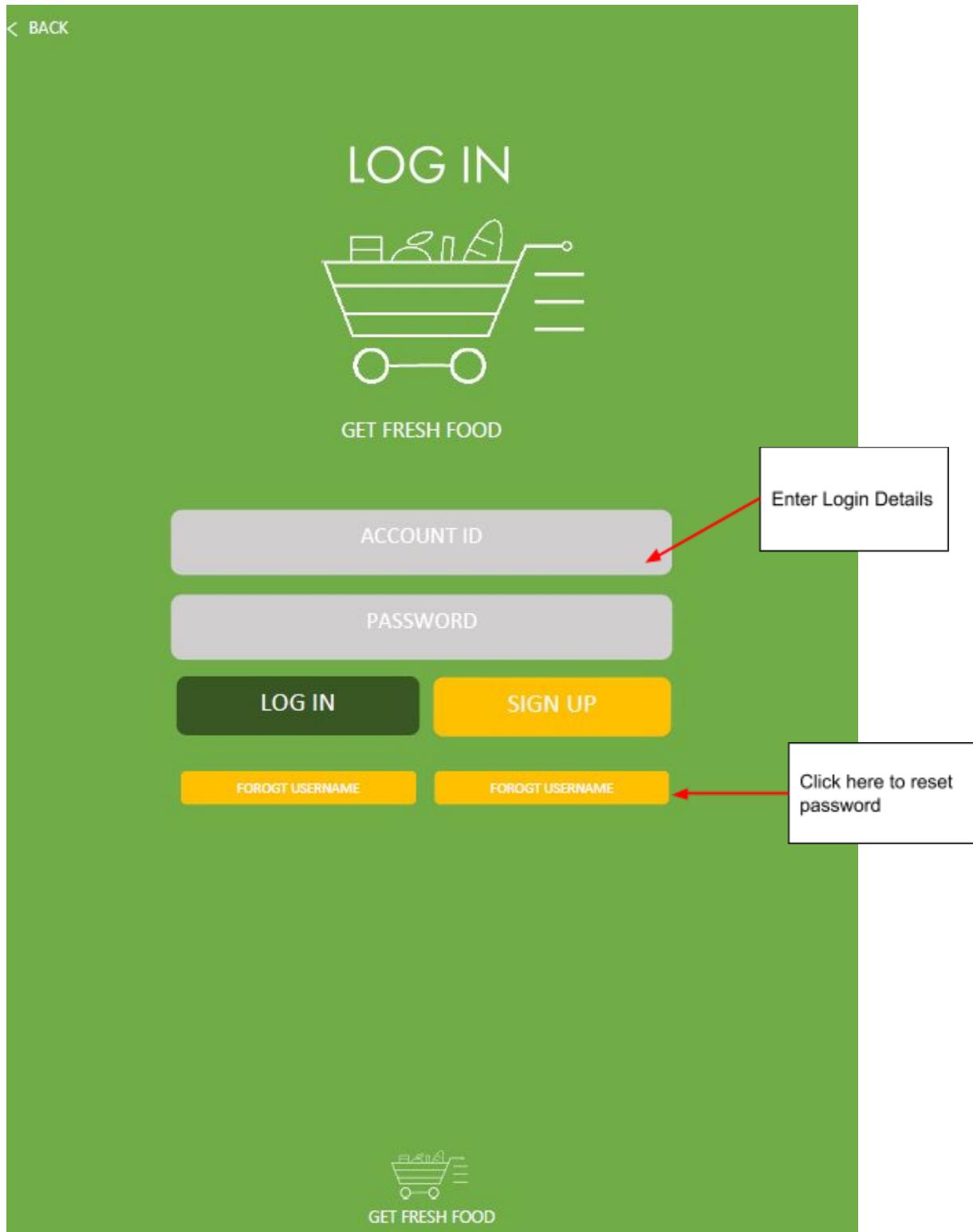






7. Screen Designs

CUSTOMER MOBILE APPLICATION LOGIN



CUSTOMER MOBILE APPLICATION HOMEPAGE

The screenshot displays the homepage of a customer mobile application for 'GETFRESHFOOD'. The top navigation bar includes a shopping cart icon with a 'GETFRESHFOOD' logo, a greeting 'HELLO THOMAS!', a notification bell icon with a '3' count, a user profile icon, and a 'LOG OUT' button. Below the navigation is a green header bar with a menu icon, 'PRODUCTS', 'PAST ORDERS', 'DELIVERY STATUS', a search bar containing 'ENTER PRODUCT...', and a shopping cart icon.

The main content area features a large promotional image of a roasted turkey with a '20% OFF' discount offer. The offer details are: USUAL PRICE \$35.00 NOW \$25.00. To the right of the turkey image is a callout box with the text 'Click here to view all grocery products' and a red arrow pointing to the 'VIEW MORE >' link.

Below the promotion is a section titled 'GROCERIES' with four categories: 'VEGETABLES' (represented by a leaf icon), 'MEAT' (represented by a steak icon), 'DAIRY' (represented by a milk carton icon), and 'OTHERS' (represented by a bag icon). To the right of these icons is another callout box with the text 'Click here to view all household products' and a red arrow pointing to the 'VIEW MORE >' link.

The next section is titled 'HOUSEHOLD ITEMS' and contains four categories: 'PET' (represented by a paw print icon), 'TOILETRIES' (represented by a toothbrush icon), 'CLEANING' (represented by a broom and bucket icon), and 'OTHERS' (represented by a tissue box icon).

At the bottom of the page is a dark green footer bar with 'CONTACT US' links for 'EMAIL', 'PHONE', and 'ADDRESS', and a 'GETFRESHFOOD' logo.

Callout boxes with red arrows point from the text 'Click here to view all grocery products' and 'Click here to view all household products' to their respective 'VIEW MORE >' links.

CUSTOMER WEBPAGE APPLICATION LOGIN

The image shows a customer webpage application with a central login modal and surrounding navigation elements.

Top Navigation: GET FOOD FRESH, PLEASE LOG IN, LOG IN, PRODUCTS, PROMOTIONS, FAST ORDERS, DELIVERY STATUS, CONTACT US, VIEW MORE >.

Modal Content: LOG IN, GET FRESH FOOD, ACCOUNT ID, PASSWORD, LOGIN, SIGN UP, FORGOT PASSWORD, FORGOT USERNAME.

Annotations:

- A red arrow points from a callout box labeled "Enter customer login details" to the "ACCOUNT ID" input field.
- A red arrow points from a callout box labeled "Click here to reset password" to the "FORGOT PASSWORD" link.

Background Elements: A promotional banner for "20% OFF" on a product, a "GROCERIES" section, a "HOUSEHOLD ITEMS" section, and a "CONTACT US" footer.

CUSTOMER WEBPAGE APPLICATION HOMEPAGE

The screenshot shows a customer webpage application homepage for 'GETFRESHFOOD'. The top navigation bar includes a search bar ('ENTER PRODUCT...'), categories ('PRODUCTS', 'PROMOTIONS', 'PAST ORDERS', 'DELIVERY STATUS', 'CONTACT US'), and a user profile ('HELLO THOMAS!', 'LOG OUT'). A red arrow points from the 'Customer Notification and account management' box to the user profile area.

The main content features a large promotional image of a roasted turkey with the text '20% OFF' and price details ('USUAL PRICE \$35.00 NOW \$25.00'). A red arrow points from the 'Promotion Advertisements' box to the turkey image.

Below the promotion are sections for 'DOOR STEP DELIVERY', 'FRESHNESS GUARANTEED', and 'ONLINE PAYMENT AVAILABLE'.

The 'GROCERIES' section displays a grid of popular items:

Item	Price	Description	Action
NutriSoy Soy Milk	\$ 3.00		ADD TO CART
Coca-Cola 6-pack...	\$ 7.20		ADD TO CART
GOLD RUSSET...	\$ 15.00		ADD TO CART
MAGNUM mini...	\$ 8.50		ADD TO CART
Publix Boneless...	\$ 12.10		ADD TO CART
DOLE spinach...	\$ 6.30		ADD TO CART

A red arrow points from the 'Most Viewed Products' box to the 'HOUSEHOLD ITEMS' section.

The 'HOUSEHOLD ITEMS' section displays a grid of popular items:

Item	Price	Description	Action
Colgate 360 white ...	\$ 4.00		ADD TO CART
Demax Ironing ...	\$ 25.50		ADD TO CART
Kleenex Ultra Soft ...	\$ 15.00		ADD TO CART
Kleenex Ultra Soft ...	\$ 12.50		ADD TO CART
PHILIPS Iron (Black)...	\$ 65.00		ADD TO CART
Flathead Broom...	\$ 15.00		ADD TO CART

The bottom of the page includes a 'CONTACT US' section with links for 'EMAIL', 'PHONE', and 'ADDRESS', and a 'GETFRESHFOOD' logo.

WEB APPLICATION PRODUCT PAGE



GET FRESH FOOD

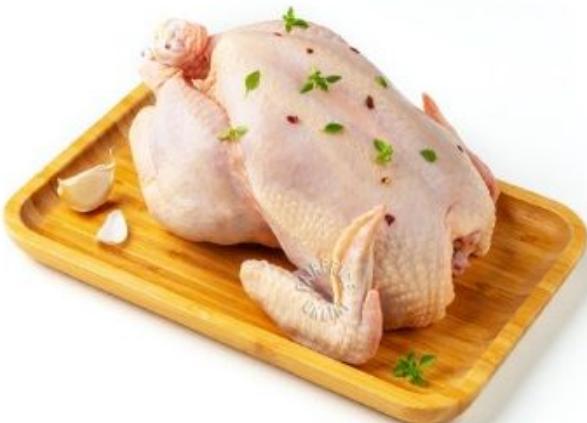
HELLO THOMAS!

LOG OUT

Home > Meat & Seafood > Chicken > Fresh Chicken

ENTER PRODUCT....

Search Product List



1/2

\$7.45

Kee Song Fresh Chicken – Whole (1.4kg)

GETFRESHFOOD

Key Information

Fresh chicken parts

Freshness guaranteed

...More

Dietary

Halal

Country of Origin

Malaysia

Storage

Refrigerate after opening

- 1 +

Add product to Shopping Cart

CONTACT US

EMAIL
PHONE
ADDRESS

GET FRESH FOOD

WEB APPLICATION SHOPPING CART



GET FRESH FOOD

HELLO THOMAS!

 3   [LOG OUT](#)

[Edit whole Cart](#)
[Delete Product](#)

SHOPPING CART (6)		EDIT	...
<input checked="" type="checkbox"/>		Vitagen Cultured Milk - Less Sugar (Assorted) 5 x 125ml	\$3.20 
<input checked="" type="checkbox"/>		Top Concentrated Liquid Detergent Refill – Anti - Bacterial 1.6kg	\$4.35 
<input type="checkbox"/>		China Fresh Garlic 500g	\$2.45 
<input checked="" type="checkbox"/>		Kee Song Fresh Chicken- Whole 1.4kg	\$7.45 
		Increase or Decrease Quantity	
Select all items in Cart		Select All	TOTAL: \$ 26.80 CHECKOUT
CONTACT US		 GET FRESH FOOD	Proceed to Payment

WEB APPLICATION CHECKOUT PAGE

The screenshot shows a web application interface for a grocery delivery service. The top navigation bar includes a logo with a shopping cart icon and the text 'GET FOOD FRESH', a user greeting 'HELLO THOMAS!', a notification badge with the number '3', a profile icon, a shopping cart icon, and a 'LOG OUT' button. The main content area is titled 'CHECKOUT PAGE'.

Annotations:

- View Shopping Cart Tab**: Points to the 'Shopping Cart' section.
- Payment details tab**: Points to the 'Payment' section.
- Enter Delivery address/ select saved delivery address**: Points to the 'Delivery Address' section, which displays a saved address: 'Bishan Groove' at '123 Bishan street 11, #22-22, Singapore 123456'. An 'Edit' link is also present.
- Enter Delivery Time slot**: Points to the 'Delivery Timeslot' section, which includes fields for 'Select Date' (set to '22 March 2020, Sunday') and 'Select Timing' (set to '2:00PM – 3:00PM').
- Total payment details**: Points to the summary table on the right, which shows:

Subtotal	\$26.80
Promo code	Add
Delivery fee	\$5.00
Total	\$31.80
7% GST included	

CONTACT US
EMAIL
PHONE
ADDRESS



WEB APPLICATION DELIVERY STATUS

The screenshot shows a web application interface for tracking food delivery orders. At the top, there is a navigation bar with a logo featuring a shopping cart and the text "GET FOOD FRESH". The navigation bar includes links for "ENTER PRODUCT...", "PRODUCTS", "PROMOTIONS", "PAST ORDERS", "DELIVERY STATUS", and "CONTACT US". A user profile section on the right says "HELLO THOMAS!" with icons for notifications (3), profile, and cart, and a "LOG OUT" button.

Pending order -delivery status (highlighted with a red arrow)

Current Order – Delivery Status

20 March 2020 Paid

Home delivery
Order total: \$31.80
Order no: A000005

Selected Delivery Date: 22 March 2020
Selected Delivery Timing: 2:00PM – 3:00PM
Status: Order packed and ready for pickup

[View details](#)

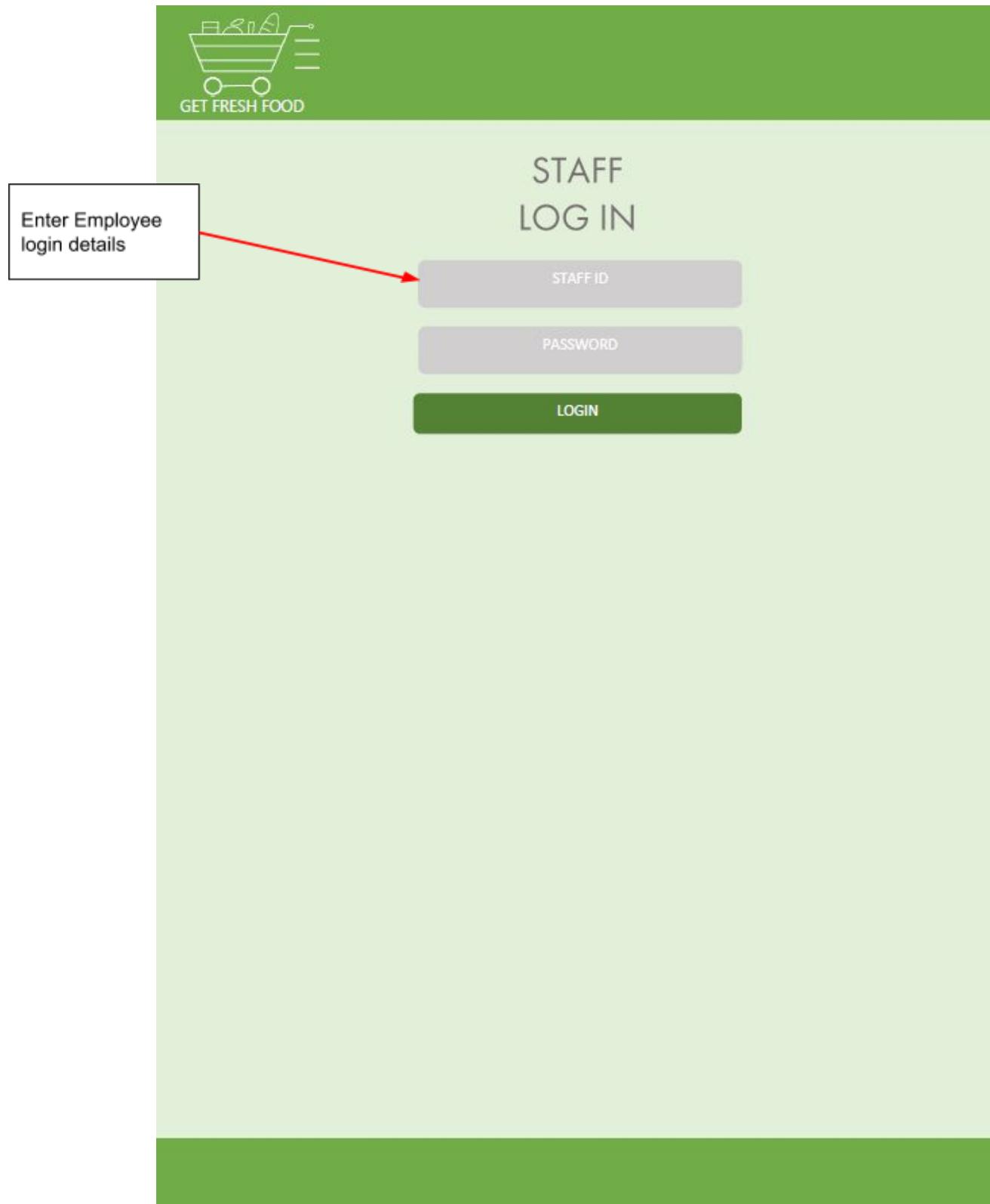
Past order -delivery status (highlighted with a red arrow)

Past Orders

Date	Status	Action
5 March 2020	Paid	✓ Delivered 6 Mar 2020, 8pm-9pm View details
7 February 2020	Refunded	✓ Delivered 9 Feb 2020, 2pm-3pm View details
18 January 2020	Cancelled	View details
5 January 2020	Paid	✓ Delivered 8 Jan 2020, 7pm-8pm View details

CONTACT US
EMAIL
PHONE
ADDRESS

EMPLOYEE APP LOGIN



BRANCH MANAGER HOME PAGE

New notification display tab

Important features tab

GET FRESH FOOD

REPORTS
REQUEST
CUSTOMER ADMIN
INVENTORIES
SUPPLIES
SALES

HELLO EDWARD!

5

LOG OUT

5 NEW NOTIFICATIONS

APPROVALS

NEW REFUND APPROVAL

NEW PURCHASE ORDER

REPORTS

NEW DAILY SALES REPORT AVAILABLE

NEW WEEKLY SALES REPORT AVAILABLE

INVENTORY

NEW PRODUCT EXPIRY

\$ 400,000

TOTAL DAILY SALE

14

EMPLOYEE COUNT

20%

MONTHLY GROWTH

TYPE OF SALES

BEST SELLING PRODUCTS

YEARLY SALES

INVENTORY VOLUME

EDIT EMPLOYEE ACCOUNT

PROMOTIONAL PRICE

APPROVALS

OPEN REPORT

GET FRESH FOOD

62

BRANCH MANAGER PRODUCT LIST

BRANCH MANAGER GENERATE SALES REPORT

Sales display parameters

Sales tab selected

Sales transcation display

Report details

Generate sales report pdf

TRANSACTION ID	CUSTOMER ID	DATE	MODE OF PAYMENT	MODE OF PURCHASE	AMOUNT
F0001	C0101	19/3/2020	CREDIT CARD	ONLINE	7.00
F0002		19/3/2020	CASH	INSTORE	4.30
F0003	C0102	19/3/2020	PAYLAH!	ONLINE	2.40
F0004	C02323	19/3/2020	PAYLAH!	ONLINE	10.00
F0005		19/3/2020	PAYWAVE	INSTORE	4.30
F0006	C02567	19/3/2020	CREDIT CARD	ONLINE	4.30
F0007	C0457	19/3/2020	PAYLAH!	ONLINE	5.60
F0008	C0967	19/3/2020	CREDIT CARD	ONLINE	2.30
F0009	C1279	19/3/2020	CREDIT CARD	ONLINE	3.50
F0010	C236	19/3/2020	CREDIT CARD	ONLINE	2.60
F0011	C463	19/3/2020	PAYLAH!	ONLINE	3.90
F0012		19/3/2020	CASH	INSTORE	3.60
F0013	C0303	19/3/2020	CREDIT CARD	ONLINE	8.60
F0014		19/3/2020	PAYWAVE	INSTORE	5.40
F0015	C964	19/3/2020	CREDIT CARD	ONLINE	5.00

TOTAL TRANSACTIONS: 15

TOTAL AMOUNT \$75.10

Generate Report

GET FRESH FOOD

STORE MAN HOMEPAGE



GET FRESH FOOD



HELLO TOM!



LOG OUT

[DELIVERIES](#)
[REQUEST](#)
[INVENTORIES](#)
[SUPPLIES](#)

 2 NEW NOTIFICATIONS

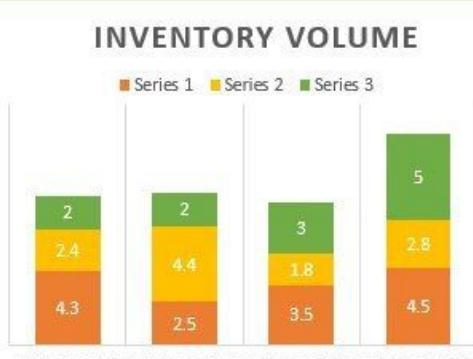
 5 DELIVERIES TODAY
 7 PRODUCTS EXPIRING
 10 PRODUCTS STOCKS LOW

PURCHASE ORDER APPROVED

INVENTORY

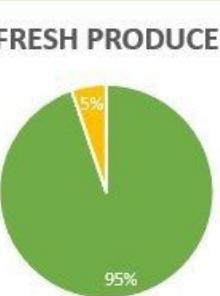
PRODUCT EXPIRED

INVENTORY VOLUME



Series 1: 4.3, 2.5, 3.5, 4.5
Series 2: 2.4, 4.4, 1.8, 2.8
Series 3: 2, 2, 3, 5

FRESH PRODUCE



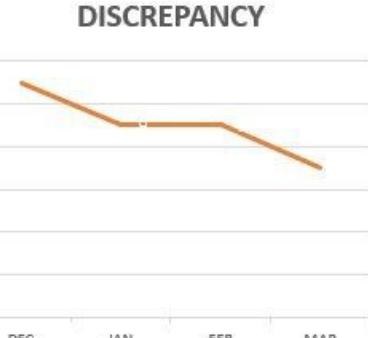
Accepted: 95%
Rejected: 5%

INVENTORY WASTAGE



DEC JAN FEB MAR

DISCREPANCY



DEC JAN FEB MAR

IMPORTANT FEATURES



UPDATE PROFILE



NEW PURCHASE ORDER



INVENTORY LIST



SUPPLIER LIST

GET FRESH FOOD

STORE MAN RAISE PURCHASE ORDER

GET FRESH FOOD

HELLO TOM!

LOG OUT

DELIVERIES REQUEST INVENTORIES SUPPLIES

BACK PURCHASE ORDER PAST ORDERS

Purchase Order No.
PO200319TOM1

YHS (S) Pte Ltd 19 March 2020

Search product or Select from dropdown

Product ID	Product Name	Unit Price	<input type="checkbox"/>	Category	Quantity
YHS001	Yeo's Packet Drink – Chrysanth...	7.20	<input checked="" type="checkbox"/>	Fast	30
YHS002	Yeo's Packet Drink – Lemon Barl..	7.20	<input checked="" type="checkbox"/>	Fast	30
YHS005	Yeo's Packet Drink – Bandung 2..	7.20	<input checked="" type="checkbox"/>	Modera..	15
YHS009	Yeo's Packet Drink – Soya Bean ..	7.20	<input type="checkbox"/>	Modera..	15

TOTAL VALUE OF ORDER: 540.00

CANCEL SUBMIT

STORE MAN INVENTORY LIST

Product List

INVENTORY LIST

Product ID	Product Name	Product Classification	Category	Price	Supplier	Location	SHELF QTY	STORE QTY	TOTAL QTY
P0101	Dasani Water	FAST	Drinks	0.90	Dasani	R3_1	100	9900	10,000
P0102	Milk	FAST	Dairy	3.50	Meiji	R2_1	50	1950	2,000
P0103	Coca Cola	MODERATE	Drinks	0.90	Coca Cola	R3_3	100	4900	5,000
P0104	Eggs	FAST	Eggs	2.60	2.6	R2_2	2000	22000	24,000
P0105	Lemon Tea	MODERATE	Drinks	0.70	Vita	R3_4	100	3900	4,000
P0106	Smart Water	SLOW	Drinks	1.20	Water Supplier	R3_1	1000	11000	12,000
P0107	Soy Milk	MODERATE	Drinks	0.90	Vita	R3_2	500	4500	5,000
P0110	Ice Cream	MODERATE	Forzen	1.40	Meiji	R4_1	10	10	20
P0123	Nutella	MODERATE	Groceries	2.60	Ferrero	R5_4	6	40	40
P0149	Apple Juice	FAST	Drinks	1.30	Coca Cola	R3_3	700	9300	10,000
P0153	Sprit	MODERATE	Drinks	1.00	Coca Cola	R3_3	50	1950	2,000
P0201	Tide Laundry Detergent	MODERATE	House Hold	23.00	Tide	R5_2	40	4600	5,000
P0202	Mama lemon Dishwashing	MODERATE	House Hold	2.00	Mama	R5_2	50	22000	22,050
P0204	Dynamo Power Gel	MODERATE	House Hold	5.00	Dynamo	R5_2	100	3900	4,000
P0205	Garbage Bag	SLOW	House Hold	2.00	Bio Green	R5_3	1000	11000	12,000
P0206	Freezer bag	SLOW	House Hold	2.50	Ziploc	R5_3	500	4500	5,000
P0209	Wet Tissue	MODERATE	House Hold	1.5	Tempo	R5_1	3	50	53
P0301	Pork Belly	FAST	Fresh Meat	1.50	Freshness	R2_3	100	9900	10,000
P0302	Beef cube	FAST	Fresh Meat	4.50	Freshness	R2_3	50	1950	2,000
P0303	Chicken Leg	FAST	Fresh Meat	3.30	Freshness	R2_3	100	4900	5,000
P0304	Bread	FAST	Bread	1.80	SunShine	R2_2	700	9300	10,000
P0305	Croissant	FAST	Bread	0.80	SunShine	R2_2	50	1950	2,000
P0306	Butter roll	MODERATE	Bread	1.50	SunShine	R2_2	50	22000	22,050
P0401	Banana	MODERATE	Fruits	1.10	Dole	R1_1	100	3900	4,000
P0402	Korea Pear	SLOW	Fruits	4.20	Dadidan	R1_1	100	3900	4,000
P0403	Apple	MODERATE	Fruits	1.40	Pasar	R1_1	1000	11000	12,000
P0404	Grapes	MODERATE	Fruits	3.00	Harvest	R1_1	500	4500	5,000
P0405	Strawberry	FAST	Fruits	3.20	Driscoll's	R1_1	1000	2200	3,200
P0405	Mango	MODERATE	Fruits	1.30	Dole	R1_1	2300	1300	3,600
P0409	Blue Berries	SLOW	Fruits	1.90	Pasar	R1_1	2000	2300	4,330
P0492	Peach	FAST	Fruits	1.60	Fresh Fruits	R1_1	10	220	230

Products low in stock

Previous

Page 3 of 7

Next

GET FRESH FOOD

STORE MAN BATCH LIST



GET FRESH FOOD


HELLO TOM!
(5)
LOG OUT

[DELIVERIES](#)
|
[REQUEST](#)
|
[INVENTORIES](#)
|
[SUPPLIES](#)

Search Product....

INVENTORY LIST
|
BATCH LIST

BATCH LIST

Product ID	Product Name	Category	Price	Supplier	Location	BATCH NO.	EXPIRY	SHELF QTY	STORE QTY	TOTAL QTY
P0101	Dasani Water	Drinks	0.90	Dasani	R3_1	1001	10/3/2020	100	200	300
P0101	Dasani Water	Drinks	0.90	Dasani	STORE	1002	10/10/2021	0	50	50
P0101	Dasani Water	Drinks	0.90	Dasani	STORE	1003	12/12/2022	0	100	100
P0101	Dasani Water	Drinks	0.90	Dasani	STORE	1004	5/6/2023	0	100	100
P0301	Pork Belly	Fresh Meat	1.50	Freshness	R2_3	2500	11/3/2020	50	50	100
P0301	Pork Belly	Fresh Meat	1.50	Freshness	STORE	2501	11/8/2020	0	100	100
P0301	Pork Belly	Fresh Meat	1.50	Freshness	STORE	2502	11/12/2020	0	20	20
P0204	Dynamo Power Gel	House Hold	5.00	Dynamo	R5_2	5000	5/2/2025	100	200	300
P0204	Dynamo Power Gel	House Hold	5.00	Dynamo	STORE	5001	5/6/2025	0	100	100
P0204	Dynamo Power Gel	House Hold	5.00	Dynamo	STORE	5002	5/7/2025	0	50	50

[Previous](#)

Page 5 of 5

GET FRESH FOOD

PROMOTER DASHBOARD

New notification display tab

The dashboard features a sidebar on the left with navigation links: GET FRESH FOOD, NEW NOTIFICATIONS (5), ONLINE ORDERS, ORDER LIST, INVENTORY, PRODUCT CLASSIFICATION, SHELF BALANCE, and INVENTORY LIST.

The central area displays a grid of shelves labeled R1-1 through R5-5 and C1-1 through C1-4. A legend indicates that green boxes represent "Healthy Shelf" and red boxes represent "Unhealthy Shelf". A callout box highlights shelf R4-4 as "Shelf that need to be restock".

At the bottom, large red numbers indicate 5 PENDING ONLINE ORDERS and 20 EXPIRED ITEMS. A "GET FRESH FOOD" button is also present.

Shop Floor					
	C1-4	C1-3	C1-2		
R1	R1-1	R1-2	R1-3	R1-4	
R2	R2-1	R2-2	R2-3	R2-4	
R3	R3-1	R3-2	R3-3	R3-4	
R4	R4-1	R4-2	R4-3	R4-4	
R5	R5-1	R5-2	R5-3	R5-4	R5-5

PROMOTER ONLINE ORDER PACKING



ORDER ID: 1000

TRANSACTION ID: 0909

DELIVERY SLOT: 20 MARCH 2020 (10:00AM)

PRODUCT ID	PRODUCT NAME	QUANTITY	SHELF	PACKED?
001	MEIJI FRESH MILK	2	C1-4	<input checked="" type="checkbox"/>
254	KEE SONG FRESH CHICKEN WHOLE	1	R4-1	<input type="checkbox"/>
021	CHINA FRESH GARLIC	1	R1-3	<input type="checkbox"/>

After Completion
order goes to
awaiting Pick-up

COMPLETE

ORDER ID : 1001

TRANSACTION ID: 0910

DELIVERY SLOT: 20 MARCH 2020 (10:30AM)

PRODUCT ID	PRODUCT NAME	QUANTITY	SHELF	PACKED?
005	DETTOL	5	R5-2	<input type="checkbox"/>
265	HAND SANITIZER	10	R5-2	<input type="checkbox"/>
430	SURGICAL MASK	20	R5-3	<input type="checkbox"/>
310	LISTERINE MOUTH WASH	2	C1-1	<input type="checkbox"/>

COMPLETE

GET FRESH FOOD

CASHIER POS

CASHIER POS CART

The screenshot shows the Cashier POS Cart application interface. At the top, there is a green header bar with a logo of a shopping cart and the text "GET FRESH FOOD". On the right side of the header, there is a user profile picture of a woman named "HELLO ANN!" and a "LOG OUT" button.

Below the header, there is a navigation bar with five tabs: "HOME", "SALE" (which is highlighted in green), "REFUND", "TRANSACTION HISTORY", and "PROFILE".

Under the navigation bar, there are three input fields: "Date" (19-Mar-2020), "Transaction ID" (SS283478), and "Total Qty : 5".

A red arrow points from the text "Scanned items" to a table below, which lists the scanned items:

Barcode/ ID	Product Name	QTY	Price	Amount
12349502	Vinegar 640ml	2	1.45	2.90
3647281	Apple	1	2.55	2.55
37251627	Sunkist	1	3.90	3.90
84939211	Mineral Water 500ml	1	1.20	1.20

A red arrow also points from the text "Proceed to payment" to the "Total: 10.55" label.

Below the total, there are two yellow buttons: "Confirm" and "Reset". To the right of the total, there are several input fields for payment details:

- Tax:** 7%
- Discount:** 0
- Payment Method:** Cash (dropdown menu)
- Paid Amount:** 11
- Change:** 0.45

At the bottom of the screen, there is a green footer bar with the text "GET FRESH FOOD".

CASHIER POS TRANSACTION HISTORY

Transaction history tab selected

HELLO ANN!

LOG OUT

HOME SALE REFUND TRANSACTION HISTORY PROFILE

From Date 16-Mar-2020 To Date 17-Mar-2020

Transaction ID Payment Mode Cashier Name

All All

Search

Transaction ID	Date	Cashier Name	Total	Total Amount	Payment Mode	
SS283478	16.3.2020	Ann	5	11.40	Cash	View Detail
SS283489	16.3.2020	Tiffany	6	8.90	Credit Card	View Detail
SS283586	17.3.2020	Keith	3	4.20	Debit Card	View Detail
SS283599	17.3.2020	Ann	1	3	NETS	View Detail

View items/details in transcation

GET FRESH FOOD

CASHIER POS TRANSACTION HISTORY DETAIL



GET FRESH FOOD



HELLO ANN!

[LOG OUT](#)

HOME

SALE

REFUND

TRANSACTION HISTORY

PROFILE

From Date	16-Mar-2020	Transaction ID		Payment Mode		Cashier Name	
To Date		Barcode/ ID	Product Name	QTY	Price	Amount	X
Transa		12349502	Vinegar 640ml	2	1.45	2.90	X
SS2:		3647281	Apple	1	2.55	2.55	X
SS2:		37251627	Sunkist	1	3.90	3.90	X
SS2:		84939211	Mineral Water 500ml	1	1.20	1.20	X
SS2:							X
SS2:							X
SS2:							X
SS2:							X
SS2:							X
SS2:							X
SS2:							X
SS2:							X
SS2:							X
SS2:							X
SS2:							X
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GET FRESH FOOD

CASHIER POS REFUND TRANSACTION OVERVIEW



GET FRESH FOOD



HELLO ANN!

LOG OUT

HOME SALE REFUND TRANSACTION HISTORY PROFILE

From Date 16-Mar-2020

To Date 17-Mar-2020

Transaction ID

Payment Mode

Cashier Name

Search

Transaction ID	Date	Cashier Name	Total	Total Amount	Payment Mode	
SS283478	16.3.2020	Ann	5	11.40	Cash	REFUND
SS283489	16.3.2020	Tiffany	6	8.90	Credit Card	REFUND
SS283586	17.3.2020	Keith	3	4.20	Debit Card	REFUND
SS283599	17.3.2020	Ann	1	3	NETS	REFUND

GET FRESH FOOD

CASHIER POS REFUND ITEM

The screenshot shows a POS system interface for a cashier. At the top, there's a green header bar with a shopping cart icon and the text "GET FRESH FOOD". On the right side of the header is a user profile picture of a woman named "HELLO ANN!" and a "LOG OUT" button.

Below the header is a navigation menu with tabs: HOME, SALE, REFUND (which is currently selected), TRANSACTION HISTORY, and PROFILE.

Under the navigation, there are search filters for "From Date" (16-Mar-2020) and "To Date" (17-Mar-2020), along with dropdowns for "Transaction ID", "Payment Mode" (All), and "Cashier Name" (All). A "Search" button is located to the right of the date fields.

The main content area displays a table of transaction details:

Transac	TRANSACTION ID	SS283478			X
SS21	Product Name	Item ID	Price	QTY	Total
SS21	NUTRISOY-SOYMILK	1032	\$2.30	2	\$4.60
SS21	Detox CABBAGE	873	\$2.50	1	\$2.50

A red arrow points from a callout box labeled "Items and details in transcation" to the "Total" column of the last row.

At the bottom of the table, there's a summary row: SS283599, 17.3.2020, Ann, 1, 3, NETS, and a green "REFUND" button.

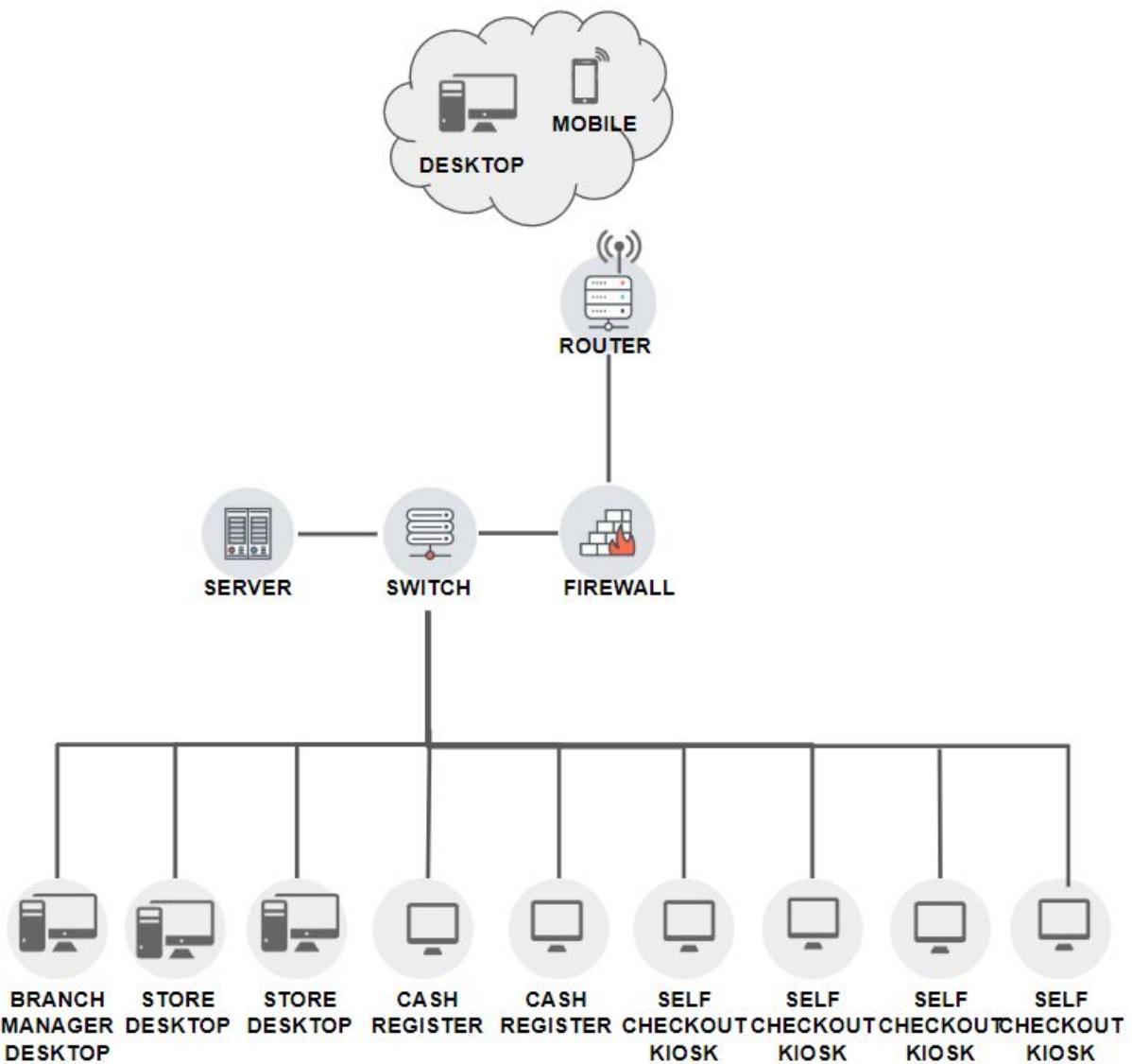
On the left side, there's a box labeled "Enter Refund amount" with a red arrow pointing towards the "Enter Refund Amount: \$0.00" input field. Another red arrow points from the "Enter Refund amount" box to the "Enter Refund Amount: \$0.00" field.

GET FRESH FOOD

8. Non-Functional Requirement

8.1 High Level System Architecture

Displayed is the system architecture diagram which presents the interaction between the hardware and software of our proposed system for GetFreshFood. It consists of the database servers, firewall, switch and client.



As the online storefront needs to be available at all times, two database servers will be used to ensure high availability – one master which handles read and write operations and the other as a slave which is read-only. Synchronisation between the two servers shall be set at 15-minute frequency fulfilling our targeted data concurrency of less than 30 minutes using utilities available on the server operating system (e.g. Lsyncd on CentOS Linux). Given that numerous shop transactions (read and write operations) take place over the day, a RAID 10 Level will be used as the storage configuration of the servers to enable efficient read and write performance. A hardware firewall will be installed before the router to filter incoming packets to prevent malicious actors from accessing the local network as well as the sensitive information residing on the database servers.

The following tables in Section 8 shows how our solutions will address the 3 non-functional requirements of Performance, Security and Reliability.

8.2 User Volume Table

User Group	Country/Location/Count	Remarks
Branch Manager	Singapore/GFF/1	Branch manager is stationed primarily at the supermarket's office and needs to use the system every day to monitor operations and grant approvals.
Promoter	Singapore/GFF/20	Promoter is stationed in the supermarket and needs to use the system every day. As promoters traverse across the shopfloor and storeroom, access to the system is mainly through employee smartphones.
Cashier	Singapore/GFF/6	Cashier is stationed in the supermarket checkout area and needs to use the system every day for Point-of-Sales functions.
Store man	Singapore/GFF/4	Store man is stationed in the supermarket and needs to use the system every day. As store men traverse across the storeroom and loading bay, access to the system is mainly through employee smartphones.
Customer (in-store)	Singapore/GFF/400	Customers shopping in-store can opt to self-checkout their purchase; the actual number of users will be limited by the availability of self-checkout kiosks.
Customer (online)	Singapore/islandwide/800	Customers shopping at their leisure times can access the system anytime islandwide in Singapore.

8.3 Business Transaction Volume Table

Biz Transaction (Use Case)	Business Criticality	No. of user	Transaction Information	Concurrent Important Activities
Maintain customer account	Low	800	3 times per month per customer	
Retrieve orders record	Moderate	800	5 times per month per customer	
Retrieve product information	Critical	800	Peak period: 200 transactions per day Normal period: 150 transactions per day	40 transactions in 1 hour
Maintain online shopping cart	Critical	800	Peak period: 200 transactions per day Normal period: 150 transactions per day	40 transactions in 1 hour
Checkout online shopping cart(select payment & delivery)	Critical	800	Peak period: 80 transactions per day Normal period: 50 transactions per day	15 transactions in 1 hour
Receive notifications on online orders status(packed,send to 3rd party logistics,refunded)	Moderate	800	Peak period: 50 times per day Normal period: 20 times per day	10 times in 1 hour
Request refunds for online orders	Critical	800	3 transactions per day	
Receive notifications on upcoming promotions	Moderate	800	50 times per day	
Maintain shopping list at self checkout kiosk	Moderate	800	Peak period: 80 transactions per day	15 transactions in 1 hour

			Normal period: 50 transactions per day	
Making Payment at self checkout kiosk	Moderate	800	Peak period: 80 transactions per day Normal period: 50 transactions per day	15 transactions in 1 hour
Retrieve price of product	Low	6	20 transactions per day	
Maintain POS for checkout	Critical	6	Peak period: 250 transactions per day Normal period: 180 transactions per day	50 transactions in 1 hour
View POS Transaction History	Moderate	6	20 transactions per day	
Process refund	Critical	6	2 times per week per staff	
Account Log in	Critical	31	2 times per day per staff	
Account Log out	Critical	31	2 times per day per staff	
Update Personal Profile	Low	31	1 time per month per user	
Maintain Customer Accounts	Moderate	1	2 times per month	
Manage Employee Accounts	Moderate	1	15 times per year	
Approve Purchase Order	Critical	1	50 times per week	
Approve Online Order Refund	Critical	1	15 times per month	
Manage Product	Critical	1	40 times per week	

Information				
Receive notification on pending requests for approval (online order refund)	Critical	1	5 times per month	
Receive notification on pending requests for approval (purchase)	Critical	1	50 times per week	
Receive notification on expiring items to apply discount	Moderate	1	1 time per day	
Receive end-of-day sales record	Moderate	1	1 time per day	
Receive weekly sales record	Moderate	1	1 time per week	
Receive notifications to raise purchase	Critical	4	70 times per week	
Raise purchase order	Critical	4	50 times per week	
Receive notifications on purchase order approval outcome	Critical	4	50 times per week	
Maintain Supplier List	Moderate	4	1 time per week	
Update inventory list after accepting products from suppliers	Critical	4	50 times per week	
Generate inventory record	Low	4	4 times per month	
Receive notification on expired products for disposal	Critical	24	1 time per day	
Update inventory list on disposal items	Critical	24	1 time per day per staff	
Receive notification on	Moderate	20	1 time per week	

product classification changes				
Receive notification on online orders	Moderate	20	Peak period: 80 transactions per day Normal period: 50 transactions per day	15 transactions in 1 hour
Update online order status after handing to 3rd party logistics	Critical	20	7 times per day per staff	
Update inventory list when restocking shelves	Critical	20	4 times per day per staff	
Pack online orders	Critical	20	7 times per day per staff	

*Peak period: weekends, public holidays and festive periods

8.4 Data Volume Requirement Table

The business entity classes involved in GetFreshFood's operations can be categorised as such:

Stable volume – Employee List, Supplier List, Inventory List, Customer List, Customer Payment Methods, Shopping Cart

Growing volume – Inventory Details, Transaction List, Transaction Details, Purchase Order List, Refund Request, Scheduled Delivery Time Slots

Business Entity Class	Source Document	Retention Period	Target Volume
Inventory List	Inventory Record	5 years	10000 inventory items (8000 current + 25% buffer)
Inventory Details	Inventory Record	5 years	1 year 7200 batches $5 \times 7200 = 36000$ batches
Supplier List	Supplier Name cards	5 years	230 suppliers (200 current + 15% buffer)
Employee List	Employee Record	5 years	40 employees (31 current + 30% buffer)
Customer List	Customer Information	5 years	2500 customers (1200 current estimate + growth over the years)
Customer Payment Methods	Customer Information	5 years	2500 customers \times 3 methods = 7500 methods
Shopping Cart	Sales record	1 year	10000 products (2000 customers with 5 items in cart)
Transaction List	Sales record	3 years	1 year 150000

			transactions $3 \times 150000 = 450000$ transactions
Transaction Details	Sales Record	2 years	1 year 150000 transactions $2 \times 150000 = 300000$ transactions
Purchase Order List	Purchase Order Form	3 years	1 year 2400 orders $3 \times 2400 = 7200$ orders
Refund Request	Refund Request Form	2 years	1 year 684 requests $2 \times 684 = 1368$ requests
Scheduled Delivery Time Slots	Contract with 3rd party logistics vendor	1 year	1 year, 365 days \times 6 time slots = 2190 slots

8.5 Security Requirement Table

Data access profile – From data point of view

Data (entity class)	Branch Manager	Promoter	Storeman	Cashier	Customer
Customer List	c, r, u, d				c, r, u
Customer Payment Methods					c, r, u, d
Transaction List	c, r, u, d			c, r	c, r
Transaction Details	c, r, u, d			c, r	c, r
Shopping Cart					c, r, u, d
Refund Request	c, r, u, d			c, r, u	c, r
Scheduled Delivery Time Slots	c, r, u, d				r, u
Inventory List	c, r, u, d	r, u	r, u	r	r
Inventory Details	c, r, u, d	r, u	r, u		
Employee List	c, r, u, d	r, u	r, u	r, u	
Supplier List	c, r, u, d		c, r, u, d		
Purchase Order List	c, r, u, d		c, r, u		

*Note: c : CREATE, r : RETRIEVE, u : UPDATE, d : DELETE

Use case access profile – From use case point of view

Biz Transaction (Use Case)	Branch Manager	Promoter	Storeman	Cashier	Customer
Maintain Customer Account					X
Retrieve orders record					X
Retrieve product information					X
Maintain online shopping cart					X
Checkout online shopping cart(select payment & delivery)					X
Receive notifications on online orders status(packed,send to 3rd party logistics,refunded)					X
Request refunds for online orders					X
Receive notifications on upcoming promotions					X
Maintain shopping list at self checkout kiosk					X
Making payment at self checkout kiosk					X
Retrieve price of product				X	
Maintain POS for checkout				X	

View POS Transaction History				X	
Process refund				X	
Account Log in	X (main user)	X	X	X	
Account Log out	X (main user)	X	X	X	
Update Personal Profile	X (main user)	X	X	X	
Maintain Customer Accounts	X				
Manage Employee Accounts	X				
Approve Purchase Order	X				
Approve Online Order Refund	X				
Manage Product Information	X				
Receive notification on pending requests for approval (online order refund)	X				
Receive notification on pending requests for approval (purchase)	X				
Receive notification on expiring items to apply discount	X				
Receive end-of-day sales record	X				
Receive weekly	X				

sales record					
Receive notifications to raise purchase			X		
Raise purchase order			X		
Receive notifications on purchase order approval outcome			X		
Maintain Supplier List	X				
Update inventory list after accepting products from suppliers			X		
Generate inventory record			X		
Receive notification on expired products for disposal		X	X (main user)		
Update inventory list on disposal items		X	X (main user)		
Update inventory list when restocking shelves		X			
Receive notification on product classification changes		X			
Receive notification on online orders		X			
Update online order status after handing to 3rd party logistics		X			
Pack online orders		X			

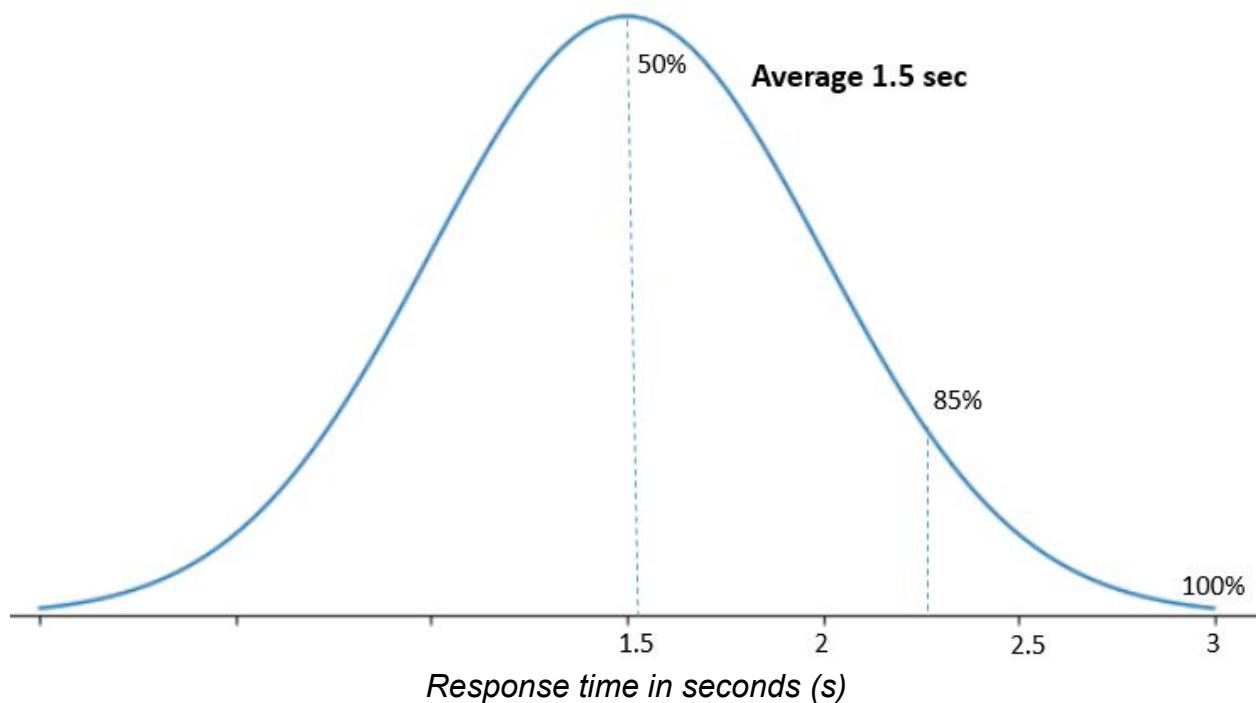
8.6 Reliability Requirement

Components	Sub-Components	Details
Operation Time	Online customer	24 hours a day
	Down Time	<15mins down time <2 times a day <4 times a month
Hardware Failure (servers, network)	Recovery	<20 mins
	Data concurrency	<30mins
Disaster Recovery	Maximum down time	<12 hours down time
	Data currency	12 hours back

8.7 Performance Requirement

Response time for each screen/window	
Normal period	Peak period
1.5 sec/screen	3 sec/screen

8.8 Daily Screen Performance Response Distribution



9. Summary

In this report, the Whitestar team has outlined the teething issues facing GetFreshFood and tailored a suite of solutions addressing them. While the field of technological solutions is wide, business context and the feedback received from user engagement were the two overriding factors considered in our choice of solutions. We took note of the unique selling points of GetFreshFood – convenience, service with a personal touch, high-quality fresh produce – and aimed to further strengthen them. Convenience is brought to the next level with the proposed online shopfront on both mobile and web. The implementation of infrared price displays will lighten the workload of GetFreshFood promoters significantly to avail them for more customer interaction. A centralised system encompassing inventory and supplier management ensures that subpar goods are kept out and inventory unfit for sales is removed promptly, delivering on GetFreshFood's promise of quality and freshness.

We would like to thank GetFreshFood for this Request for Information invitation for the Whitestar team to showcase our capabilities in devising solutions fitting your business needs. We are confident that the business can scale greater heights by adopting the solutions proposed.