

# INTRODUCTION

# Chapter 1

## Purpose:

- The purpose of this document is to outline the development of a **Unified Branch Management System**. Designed to address the critical challenges faced by the organization due to the lack of integration between its various branches and the difficulties in maintaining and enhancing the existing system.
- The new system aims to resolve these issues by integrating all branches into a single, modern platform that enables real-time data sharing, simplifies maintenance, and supports scalability. It will centralize data management, reduce operational costs, and enhance the customer experience by delivering consistent and efficient service across all branches.

## Scope:

### 1. Inventory Management:

- Track and manage stock levels for all clothing items (shirts, pants, dresses, accessories).
- Support categorization of items by type, size, color, and brand.
- Provide real-time updates on stock availability.
- Generate alerts for low stock levels and automatic reordering suggestions.

### 2. Point of Sale (POS) System:

- Enable in-store sales transactions.
- Support multiple payment methods (cash, credit/debit cards, mobile payments).
- Generate receipts for customers.
- Handle returns and exchanges.

### 3. E-Commerce Platform:

- Allow customers to browse and purchase clothing items online.
- Provide a shopping cart and checkout functionality.
- Support order tracking and delivery status updates.

### 4. Customer Relationship Management (CRM):

- Maintain a customer information database (name, contact details, purchase history).
- Track customer preferences and feedback.

### 5. Sales and Reporting:

- Generate daily, and monthly sales reports.

- Provide insights into best-selling items, peak sales periods, and customer trends.

## **6. Employee Management:**

- managing employee schedules, commissions, and performance tracking.

## **7. User Roles and Permissions:**

- Define different user roles (Manager, Cashier, Sales staff).
- Assign permissions based on roles .

## **8. Integration with External Systems:**

- Sync inventory data between the POS and e-commerce platforms.
- Integration with payment gateways (credit cards, PayPal, mobile wallets).

## **Objectives:**

- Adding the possibility of linking branches and working to facilitate communication between them.
- Improve customer engagement through loyalty programs and personalized offers.
- Provide a seamless shopping experience across in-store and online platforms.
- Simplify the sales process through an intuitive POS system.
- Ensure the system can be easily expanded with new features or integrations in the future.

## **Abbreviation:**

- POS: point of sale.
- B2G1: buy 2 get 1.
- FTE: full time employee.
- OOF: out of stock.
- UPT: unit per transaction.
- KPI: key performance indicator.
- WJ: winter jacket.
- SJ: summer jacket.
- WP: winter pants.
- SP: summer pants.
- WB: winter blouse.
- SB: summer blouse.
- WS: winter shoes.

- SS: summer shoes.

### Some Abbreviation about colors:

- 1 : white.
- 2 : black.
- 60: red.
- 64: dark red.
- 35: blue.
- 40: baby blue.

### Some abbreviation about size:

- 61: medium.
- 62: large.
- 63: X Large
- 64: 2X Large.
- 65: 3X Large.

### Terminology:

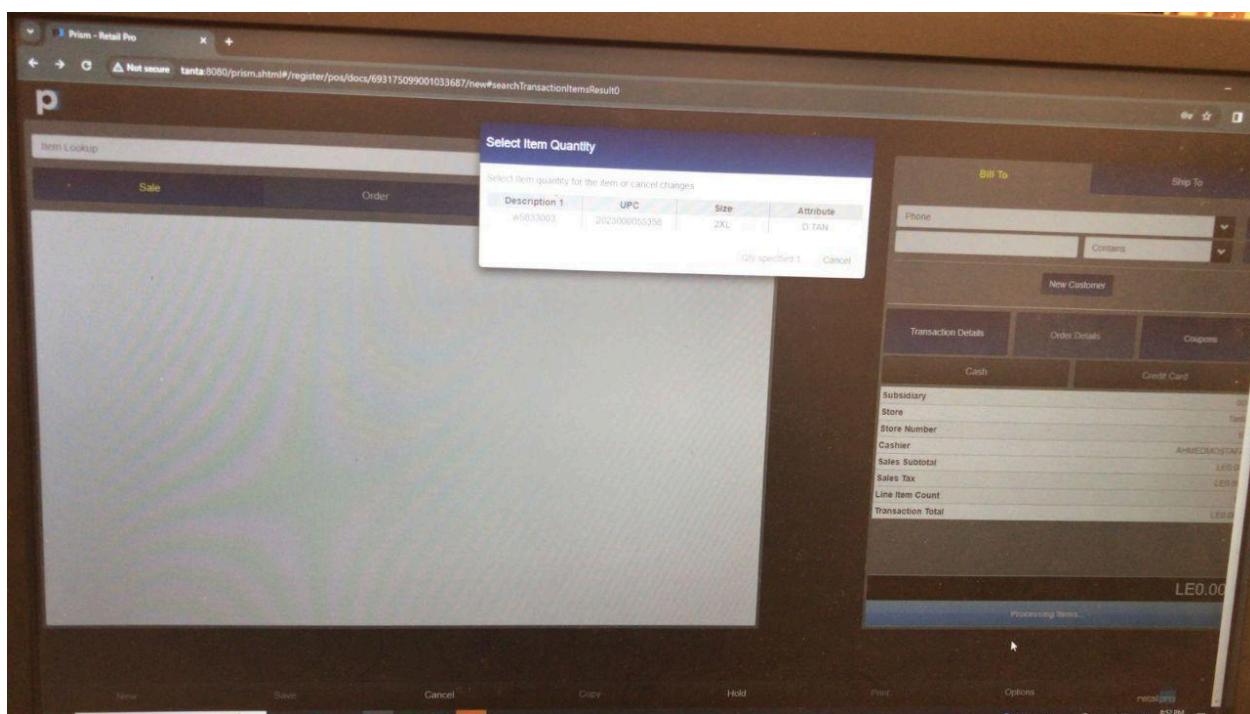
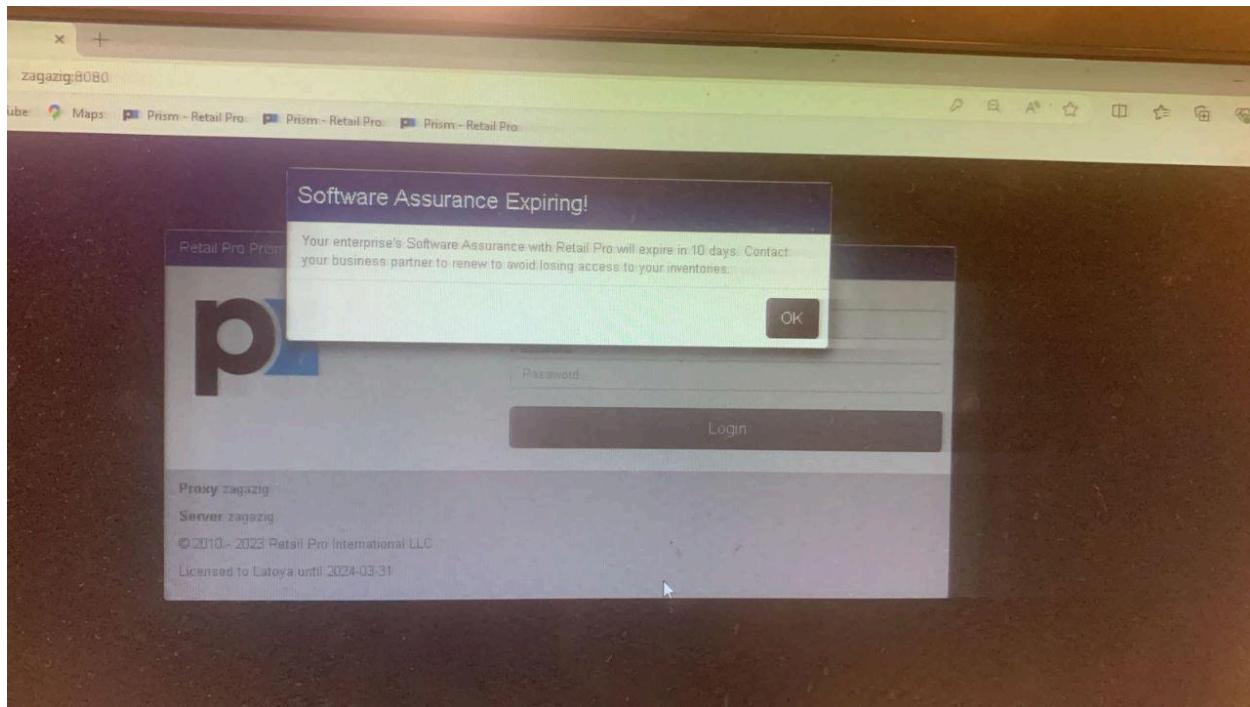
- Casual.
- Soiree.
- Sneakers.
- Hoodie.
- Jeans.
- Sweater.
- Dress.
- Pants.
- Jacket.
- Shirt.
- Shorts.
- Floor.
- Fitting room.
- Cargo.
- Short.
- Over.

### Definition :

The system is concerned with facilitating sales , management and inventory operations.

- 1) **Inventory** : Counting everything that is in the branch and the store and matching it with the system. When there is a difference in increase, then it is called over, and when there is a decrease, It is called a short.
- 2) **Turn** : It means whose role is in the work (meaning the customer goes to whom in the work team) .
- 3) **Three OR Bile** : Not in the sense of 3, but in the sense of the entire model's sizes from medium to 3XLarge .
- 4) **Point of sale** : This is the step that takes us to the invoice step.
- 5) **Z Out** : end the shift and close the day .
- 6) **New transaction** : A new process, which is opening a sales invoice, takes place in the point of sale step .
- 7) **Unit per transaction** : Number of units in the process (number of pieces in the invoice) .
- 8) **Dona** : section contains best Seller items.

References :



1692/new#search transactionItemsResult()

	Desc 2	Item Size	Season	COLOR	Section	Age	Attr	Cost	Price	Active Mar..	Store Qty	Vend Doc Qty	Total Records
	لـ مشجر كاسين	M	summer 2023	black	تصنيع	كاجوال	BLACK	\$175.00	\$175.00	10	S- ne 0	0	
	لـ مشجر كاسين	L	summer 2023	black	تصنيع	كاجوال	BLACK	\$175.00	\$175.00	6	S- ne 0	0	
	لـ مشجر كاسين	XL	summer 2023	black	تصنيع	كاجوال	BLACK	\$175.00	\$175.00	7	S- ne 0	0	
	لـ مشجر كاسين	2XL	summer 2023	black	تصنيع	كاجوال	BLACK	\$175.00	\$175.00	6	S- ne 0	0	
2/1	جزـ ورد كاسين	M	summer 2023	black	تصنيع	كاجوال	BLACK	\$0.00	\$0.00	4	S- ne 0	0	
2/1	جزـ ورد كاسين	L	summer 2023	black	تصنيع	كاجوال	BLACK	\$0.00	\$0.00	4	S- ne 0	0	
2/1	جزـ ورد كاسين	XL	summer 2023	black	تصنيع	كاجوال	BLACK	\$175.00	\$175.00	4	S- ne 0	0	
2/1	جزـ ورد كاسين	2XL	summer 2023	black	تصنيع	كاجوال	BLACK	\$175.00	\$175.00	3	S- ne 0	0	

Apr 4, 24 4:56 PM

# LATOYA

WOMEN'S COLLECTION

## Tanta

10

TAN

Cashier: AHMEDMOSTAFA

Associate: 10ASHWAQ ALARABY MOHAMED

Cust\_Name MOSTAFA

Cust\_Phone 01146946210

Cust\_Address tanta

Transaction # 24733

Date: Apr 4, 24 4:56 PM

### Items

Type	Qty	Ext Price
Sale	1 *LE795.00	LE795.00

1

Item Sold

Sale Subtotal: LE795.00

Total Discount: LE0.00

Receipt Total: LE795.00

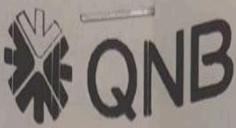
### Tenders

Payment Method	Amount
Cash	LE795.00



703360360001099716

يسمح باستبدال أو استرجاع البضاعة بشرط عدم حدوث تغير في حالها  
ذلك خلال 14 يوم من تاريخ الشراء مع الحفاظ على البضاعة الأصلية للشراء حاصل  
السواريه لا يبدل ولا يسترجع  
السعر شامل ضريبة القيمة المضافة  
شكراً لزيارةكم، لكم فرحتنا.  
من ت: 8891 ب: 222 196-892-222  
لشكاوى 9588



LATOYA

TANTA

GHARIBIA

TERMINAL ID: 00332810  
MERCHANT ID: 011788880738519  
DATE: 08-09-24 TIME: 23:02  
BATCH NO: 000479

CLOSE BATCH

VISA

SALES	(002)	1,500.00 EGP
REFUND	(001)	875.00 EGP
TOTAL		(003) 625.00 EGP

MASTER

SALES	(004)	3,335.00 EGP
TOTAL		(004) 3,335.00 EGP

MEEZA

SALES	(001)	2,430.00 EGP
REFUND	(001)	1,190.00 EGP
TOTAL		(002) 1,240.00 EGP

GRAND TOTALS

SALES	(007)	7,265.00 EGP
REFUND	(002)	2,065.00 EGP
TOTAL		(009) 5,200.00 EGP

THANK YOU FOR USING  
QNB ALAHILI NETWORK

SETTLEMENT APPROVED

# FEASIBILITY STUDY

## Technical Feasibility

This software is feasible within the limits of the current system. It is available within the given resource constraints and the available hardware.

This software can easily handle all processes the staff need:

- **Point of Sale (POS):**

A modern POS system that supports barcode scanning, multiple payment methods (cash, credit card, mobile payments), and real-time transaction processing.

- **Inventory Management:**

A centralized inventory management system that tracks stock levels in real-time across all branches. The system will handle different SKUs for sizes, colors, and styles, ensuring accurate stock tracking.

- **Sales and Reporting:**

Advanced reporting tools that provide insights into sales performance, inventory turnover, and promotional effectiveness. Reports will include total sales breakdown by payment method, net sales, returns.

- **User Roles and Permissions:**

The system will support different user roles (Manager, Cashier, Employee) with specific permissions. For example, managers will have the ability to grant refunds, transfer items between branches, and manage inventory, while cashiers will have access to the POS system.

- **Integration with External Systems:**

The system will integrate seamlessly with external services, including e-commerce platforms, accounting software, and payment gateways. This will ensure that online and in-store sales are synchronized, and financial data is accurately recorded.

- **User-Friendly Interface:**

The system will be designed with a user-friendly interface, making it easy for employees with limited technical expertise to navigate and use the system effectively.

Which can be achieved by :

- **.NET Framework:**

The core framework for developing the desktop application.

- **Windows Presentation Foundation (WPF):**  
For building the **user interface (UI)** of the desktop application.
- **Entity Framework (EF) Core:**  
To manage database operations and ensure real-time synchronization of inventory across branches.
- **SQL Server Database:**  
To store inventory data, including SKUs, stock levels, and product details.
- **Barcode Scanning:**  
Using **.NET libraries** like **Zebra SDK** or **Dynamsoft Barcode Reader** to integrate barcode scanning functionality.
- **Payment Processing:**  
Integrating with **payment gateways** (**credit cards, PayPal, mobile wallets**) using their **.NET SDKs or APIs**.
- **Receipt Printing:**  
Using **.NET libraries** like **ESC/POS** or **PrintDocument** class for printing receipts.
- **Real-Time Transaction Processing:**  
Using **multi-threading** in .NET to handle real-time transactions without blocking the UI.
- **SignalR:**  
is a library for ASP.NET developers that simplifies the process of adding real-time web functionality to applications. For real-time updates across multiple branches.
- **Authentication:**  
Using **Windows Authentication** or **JWT** for securing user login.
- **Authorization:**  
Implement **role-based access control (RBAC)** to restrict access to sensitive features.
- **Data Encryption:**  
Using **AES encryption** in .NET to encrypt sensitive data (customer information, payment details).
- **Data Synchronization:**  
Using **Azure Data Sync** or custom synchronization logic to ensure data consistency between the desktop application and external systems.
- **Webhooks:**  
Implementing webhooks to receive real-time updates from external systems (new orders from the e-commerce platform).

# Operational Feasibility

## . Automation of Manual Processes

One of the key operational benefits of the new system is the automation of manual processes, which will significantly improve efficiency and reduce errors. The following manual processes will be automated:

- **Inventory Management:**

The system will automatically track stock levels in real-time, eliminating the need for manual inventory checks. This will reduce the risk of overstocking or understocking and ensure accurate stock records.

- **Sales Reporting:**

Sales data will be automatically recorded and analyzed, providing managers with real-time insights into sales performance and inventory turnover.

## . Real-Time Inventory Tracking

The new system will provide real-time inventory tracking across all branches, ensuring that stock levels are always accurate. This will allow employees to quickly check the availability of items and transfer stock between branches as needed. Real-time inventory tracking will also improve the customer experience, as customers will be able to see real-time stock availability online and in-store.

## . Improved Customer Service

The new system will enhance the customer experience by allowing customers to return or exchange items at any branch, rather than being limited to the branch where the purchase was made. This will provide greater convenience for customers and improve overall satisfaction. Additionally, the system will support multiple payment methods, including credit cards and mobile payments, ensuring a seamless checkout experience.

## . Enhanced Reporting and Decision-Making

The new system will provide managers with detailed sales and inventory reports, enabling them to make informed decisions about product offerings, promotions, and inventory management.

Reports will include:

- **Total Sales Breakdown:**

By payment method, product category, and branch.

- **Inventory Turnover:**  
Insights into which products are selling quickly and which are not.
- **Promotional Performance:**  
Analysis of the effectiveness of promotional campaigns, allowing managers to adjust strategies as needed.

### **. Employee Training and Adoption**

To ensure a smooth transition to the new system, comprehensive training programs will be provided for all employees. Training will be tailored to different user roles, ensuring that each employee understands their specific responsibilities. Ongoing technical support will also be provided to address any issues or questions that arise during and after the transition.

## **Economic Feasibility**

### **Tangible cost:**

- **Staff Working Hours:**
  - . Salaries and wages for employees (managers, cashiers, sales associates).
  - .Costs associated with hiring and training new employees.
- **Rent for the Store:**
  - .Monthly rent for the physical store location.
  - .Costs for utilities (electricity, water, internet).
- **Rent for Inventory Storage:**
  - . The store uses a separate warehouse(the cost of renting that space).
- **Buying Materials:**
  - .Cost of purchasing clothing items, accessories, and other products .
  - .Shipping and handling fees for transporting goods to the store.
- **Equipment for the Store:**
  - .Point of Sale (POS) systems, barcode scanners, and receipt printers.

- .Computers, tablets, or other devices for managing inventory and sales.
- .Security systems (cameras, alarms) to prevent theft.
- **Maintenance Costs:**
  - . Regular maintenance of store equipment (POS systems, security systems).
  - .Repair costs for damaged equipment or store fixtures.

## Intangible cost:

- **Experience:**
  - .Potential loss of sales or customer trust due to inexperienced staff.
- **Team Cooperation:**
  - .The cost of poor communication or lack of teamwork among employees, which can lead to inefficiencies.
- **Brand Reputation:**
  - .The cost of negative reviews or poor customer experiences, which can harm the store's reputation.

## Tangible benefits:

- **Revenue from Sales:**
  - .Income generated from selling clothing items, accessories, and other products.
  - .Revenue from online sales.
- **Customer Traffic:**
  - .Increased foot traffic in the store, leading to higher sales.
  - .Repeat customers who contribute to steady revenue streams.
- **Increased Activity Speed:**
  - .Faster checkout processes and efficient inventory management lead to higher customer satisfaction and more sales.
  - .Reduced waiting times for customers, which can improve the overall shopping experience.

- **Market Expansion:**  
.Opportunities to open new branches or expand into new markets, increasing overall revenue.

## Intangible benefits:

- **Customer Satisfaction:**  
.Positive word-of-mouth can lead to increased customer traffic and sales.
- **Trust Between Customer and Seller:**  
.Building trust with customers can lead to long-term loyalty and repeat business.

## One time cost:

- **Store Equipment:**  
.Purchase of display racks, shelves, mannequins, hangers, and other store fixtures.  
.Initial setup costs for POS systems, barcode scanners, and security systems.
- **Mannequins and Hangers:**  
.Cost of purchasing mannequins for displaying clothing items.  
.Cost of hangers for organizing and displaying products.
- **Point of Sale (POS) System:**  
.Initial purchase and setup of POS hardware and software.  
.Licensing fees for POS software.
- **Permits and Licenses:**  
.Costs associated with obtaining business licenses, permits, and certifications required to operate the store.

## **Recurring costs:**

- **Cost of Maintaining the Store:**
  - .Regular upkeep of the store premises.
  - .Maintenance of store equipment (POS systems, security systems).
- **Cost of Rent for the Store:**
  - .Monthly rent for the physical store location.
  - .Utility bills (electricity, water, internet).
- **Cost of Rent for Inventory Storage:**
  - .Ongoing rent for warehouse or storage facilities.
- **Taxes and Insurance**

**PROPOSAL  
SYSTEM ANALYSIS**

## Manager Interview

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-> Give a brief about yourself :

- . Name : Bola Amir Abd-Elmassih
- . Age: 22
- . Job title: Branch manager
- . Experience: 2 years

1. What is the store Name?

- Latoya

2. Are there other branches?

- 8 branches

3. Do you have any current software?

- Yes

4. Would you prefer a completely new system or are you looking to upgrade the existing system?

- I would prefer a new system

5. What is the overall architecture of the system?

- Point of sale, inventory management, search for items, analytic and reporting tools, reporting under/over stock, sold items, receipts, transition between branches.

6. What level of technical expertise do your employees have?

- They have qualifications and technical diplomas, including beginner, intermediate, and advanced levels.

7. What is the budget allocated for this project? Are there any constraints or considerations related to it?

- The budget allocated for this project is 250,000. However, there are a few constraints and considerations to keep in mind:
- Software Licensing:Licensing fees for the POS software and any third-party integration need to be factored in.
- Training Costs: Employees will require training to use the new system effectively, which may involve additional expenses.
- Maintenance and Support: Ongoing maintenance and technical support should be considered to ensure the system's long-term sustainability.

- Contingency Fund: A small portion of the budget should be reserved for unexpected costs or changes in project scope.

#### 8. What is the project timeline?

- 3 : 6 months

#### 9. How does the POS system work? What features does it include?

- A POS system works by processing transactions: it calculates the total amount due for purchases, accepts various forms of payment features: scanning barcodes, processing payments, issuing receipts.

#### 10. What are the different user roles ( manager, employee, cashier) in the system?

- Manager :
  - grant refund privilege
  - transfer items between branches
  - manage inventory
- Cashier :
  - Has access to POS
- Employee :
  - Customer assistance

#### 11. How is data (such as product information, customer details, and sales records) stored and managed within the system?

- Data is stored in databases and managed through integrated software applications like POS, inventory, customer information, and e-commerce platforms.

#### 12. Are there any reports and analytics you require from the system?

- Total sales breakdown by payment method (cash, Visa)
- Net sales reports
- Returns reports
- Number of units sold
- Performance analysis of promotional campaigns
- Sales performance per seller, including total revenue generated and number of units sold

#### 13. Does the system integrate with external services (accounting software, e-commerce platforms, payment gateways)?

- Yes, we have an e-commerce website

#### **14. How is inventory managed?**

- A committee, comprising six individuals, including the head of Inventory is assembled from the warehouse management team. These committee members serve as stockists responsible for managing goods within the warehouse.
- A representative from branch management conducts a physical count of the inventory. to verify whether the actual stock count matches the recorded quantities.
- The verified inventory counts are meticulously entered into an Excel sheet. The committee reviews this data to identify any discrepancies (deficits or excesses) between the recorded and actual stock levels.
- The committee then carries out a reconciliation process. This involves comparing the results of the physical count with the recorded quantities and adjusting inventory records as needed

#### **15. Do you need real-time inventory tracking across multiple locations?**

- Yes

#### **16. Do you manage different sizes, colors, and styles as separate SKUs(Stock Keeping Unit)?**

- Yes, we manage different sizes, colors, and styles as separate SKUs.

For example:

- S118034-21-61 represents a summer version of a specific blouse.
- W118034-21-61 represents the winter version of the same blouse.

In both cases:

- 118034 is the model number (same blouse).
- 21 represents the color (off-white).-
- 61 represents the size (M).

-This system allows us to track inventory accurately based on season, color, and size.

#### **17. How do you handle inventory synchronization between online and in-store sales?**

- There is a team online that deals with the online customer when the customer selects an item. Someone from the team checks which branch has the item available, inspects it for defects, and then processes a transfer authorization to the online system.
- They don't differentiate on the system between items in the store and the warehouse. When items come in, they are registered once on the

system, and placed in the warehouse, and they take them out from there.

**18. How is the cost of goods calculated, including the purchase price, taxes, and profit margin?**

- The product's price from the supplier, plus 14% taxes, and a fixed profit margin from the store at 50%.

**19. How do you handle bonuses?**

- Every employee who brings in 150,000 profit to the branch will receive a quarter percent bonus.

**20. How do you handle returns, exchanges, and damaged items?**

Returns:

- Customers can return items within 14 days of purchase. We also make exceptions for VIP customers as part of our commitment to providing excellent service.
- The cashier processes the return through the POS system, which automatically updates the inventory and issues a refund to the original payment method or store credit.

Exchanges:

- If a customer wants to exchange an item, we check the availability of the desired product in the system.
- The POS system adjusts the inventory by removing the returned item and adding the new item

Damaged Items:

- Damaged items are inspected to confirm the issue. If the item has a manufacturing defect, the return period is extended to 30 days.
- The damaged item is marked in the system as 'defective' and removed from inventory to prevent resale.

Security Measures:

- To prevent theft or misuse, returns and exchanges require authorization from the branch manager or assistant manager. This is done by entering a password in the POS system to approve the transaction.

**21. How do you evaluate the success of products or promotions, and what actions do you take based on that evaluation?**

- Track the performance of sales for each product or promotion to determine if it's successful. If it's not performing well, we won't repeat it. The goal is to attract customers.

**22. What are the maintenance and long-term sustainability requirements for this system ?**

- Regular system updates every 2 months.
- Data backups, which occur at the company's headquarters, not on the branch system.
- Technical support to resolve issues.

## Cashier Interview

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-> Give a brief about yourself :

- . Name : Ahmed Mostafa
- . Age : 20
- . Job title : cashier
- . Experience : 1 year

1. Did you use any software before ?

- Yes

2. What tasks do you manually perform daily in the current system ?

- Daily inventory is conducted manually.
- Customer data is recorded manually in the system.
- To verify the inventory of a specific model, we retrieve the quantity from the system and compare it with the actual stock available in the store or warehouse.

3. What do you think are the advantages of the current system?

- Easy to use , linking between payment methods (credit card)

4. What limitations or drawbacks have you observed in the existing system?

- System maintenance involves intricate processes
- The branches are not connected together

5. Do you ever face issues with payment processing (e.g., credit cards, mobile payments)?

- No

6. Do you have any difficulties applying discounts, promotions, or loyalty rewards?

- No

7. Are you ready to transition from the current system to the new one?

- Yes

8. What steps do you follow when recording a sales transaction?

- Select the seller, then scan the sold item using the scanner, enter the customer details (name, phone number, address), choose the payment method, and print the invoice.

9. How do you check if an item is in stock? Is the process quick and accurate?

- By entering the model number in the search.

**10. How does the system impact sales, inventory management, and customer satisfaction?**

- The system facilitates faster transactions and encourages upselling, boosting sales, optimizing inventory management with real-time inventory tracking, and improving customer satisfaction with faster checkout and personalized service, leading to customer loyalty and referrals.

**11. What are the requirements for the system's design?**

- Point of sale
- Product Catalog Management
- Promotions and Discounts
- Inventory Management
- Payment Integration
- Connect branches
- Analytics and Reporting(Track sales, inventory turnover, short, over)
- Search and Filtering products (by scanning barcodes)

**12. What information needs to be included in the purchase invoice?**

**Cash Invoice :**

- Invoice Number
- Date and Time

**Customer Information:**

- Customer Name
- Customer Phone Number
- Customer Address

**Items Purchased:**

- Description of items
- Quantity of each item.
- Price per item and total price for each item.

**Payment Details:**

- Payment Method.
- Amount paid .

**Total Amount** (including any discounts or taxes)

**Store and Cashier Information:**

- Store name
- Cashier name
- Associate name

## **Return Policy**

### **2. Visa Invoice :**

**Invoice Number**

**Date and Time**

**Terminal and Merchant Information:**

- Terminal ID
- Merchant ID

**Transaction Details:**

- Type of transaction.
- Number of transactions.
- Amount for each transaction type.

**Payment Method**

**Total Amount**

**Settlement Information**

**Network Information**

**13. Do you need to access inventory information for other store locations?**

- Yes

**14. What measures are taken to prevent unauthorized access?**

- Authentication, access controls, monitoring, physical security, and training.

**15. Do you have the necessary tools and resources to perform your tasks effectively?**

- Yes

**16. Do you need to add anything else**

- No, thanks

## Customer Interview

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-> Give a brief about yourself :

- . Name : Jessica Emad
- . Age : 20

1. How often do you shop at this store?

- Monthly

2. Is there anything you find challenging or frustrating when shopping here?

- Currently, I can only return or exchange items at the branch where I made the purchase. Allowing returns at any branch would be much more convenient.
- When I don't find the piece I came for

3. How was your experience with employees?

- They were friendly and helpful

4. How important is it for you to know if an item is in stock before visiting the store?

- It's important for me to know if the item is in stock before going to the store, so I don't waste my time if it's unavailable.

5. What incentives would encourage you to shop more frequently?

- Ease of handling transaction processes and accessibility to items.

6. How seamless is the checkout process?

- the process was easy and quick

7. What payment methods do you prefer to use (cash, credit card, mobile payments)?

- I prefer using credit cards or mobile payments like Apple Pay or Google Pay. They're faster, more secure, and I don't have to carry cash around. Plus, I can keep track of my expenses easily.
- That said, if I don't have my card with me or the mobile payment option isn't available, cash works fine too. It just depends on the situation. But having multiple payment options is definitely a plus!

8. Have you ever faced any issues during payment processing (declined cards, slow transactions)?

- No

9. What would make your experience even better?

- If were all branches connected together so I can exchange the item from any branch.

10. Do you prefer shopping online or visiting the physical store?

- I used to visit the store itself to buy any item. But when I tried buying online , I changed my mind.

11. What factors influence your choice between the two?

- Smoothness of using the site

12. How intuitive is the website ?

- It was easy to use.

13. Are you part of the store's loyalty or rewards program? If yes, how satisfied are you with it?

- The loyalty program is nice, but it would be more rewarding if it offered personalized discounts or early access to sales.

14. How do you prefer to receive updates about new arrivals, sales, or promotions (email, SMS, social media)?

- I prefer to receive updates through email and social media. Email is great because I can check the details at my own pace, and social media is convenient since I'm already on those platforms often. SMS is okay too, but sometimes I get too many messages, so I might miss them.

15. What improvements would you suggest to enhance your shopping experience?

- Overall, I enjoy shopping here, but there are a few things that could make the experience even better. For example, more detailed product descriptions would help me understand the fit and material better, especially online. In-store, having more fitting rooms or assistants to help with sizing would be great. And for online shopping, faster delivery options would make things much more convenient. These changes would really enhance the experience!

16. Have you ever returned or exchanged an item? How was the process?

- Yes, I did. It was easy when I bought an item from the same branch. The cashier asked to see the receipt, then he showed it to his manager. Then the manager did the procedure by himself.

# Clothe store

## Requirement Definitions

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### 1. Unspoken Requirements :

- Calculate the profit achieved by each employee for commissions.
- The customer faces a problem returning a product when he takes it from another branch or loses the bill.
- Repeat customers get points and discounts.
- Troubleshooting should be easy.

### 2. Stakeholders :

#### . Branch Manager :

- refund items(permission)
- Transfer items
- Manage inventory
- Manage employees

#### . Cashier :

- login with fingerprint
- login to the system
- search item
- scan item
- prepare bill
- print bill
- calculate bonus for the customer and employee
- receive salary

#### . Customer :

- select item
- buy items
- receive bill
- refund items
- receive bonus

. System Administrator :

- Troubleshoot Issues:
- . Manage database
- . Maintain a website
- Receive salary

. Employee :

- login with fingerprint
- receive salary
- assist customers
- receive bonus

### 3. Requirement types :

-> Functional requirements :

- Point of sale :

. should be user-friendly.

- Product Catalog Management :

. The system should allow the store owner to add, edit, and remove products.

. It should support categorization(sizes, colors, and styles) .

- Promotions and Discounts:

. Repeat customers get points and discounts.

. Calculate the profit achieved by each employee for commissions and promotions.

. Apply discounts based on specific conditions (seasonal sales, loyalty programs).

- Inventory Management:

. Barcode tracking of available stock.

- Payment Integration:

- . Integration with payment gateways (credit cards, PayPal, mobile wallets).

- . Secure handling of payment information.

- **Connect branches:**

- . to easily refund items from another branch.

- . Customers can earn and redeem loyalty points at any branch.

- . If a particular branch has excess stock, it can transfer items to other branches where demand is higher.

- **Analytics and Reporting:**

- . Sales reports

- . popular products

- . customer behavior analysis

- . inventory turnover

- . short

- . over

- . Bills number

- **Search and Filtering products:**

- . Search for an item using a barcode.

- . Filters based on size, color, price range.

- **Returns and Refunds:**

- Clear policies for returns and refunds.

- Customers can return items within 14 days of purchase.

- Damaged items are inspected to confirm the issue. If the item has a manufacturing defect, the return period is extended to 30 days.

## **> Non-Functional requirements :**

- **Performance:**

- . The system should provide fast and efficient performance.

- . ability to handle peak traffic during the sales Promotions.

- **Security:**

- .Protection of customer data.
- .Refund items can only be done with the manager permission .

- **Scalability:**

- .Ability to handle increased traffic as the store grows.

- **Legal and Compliance:**

- . Terms of service and privacy policy.

- **Usability:**

- . Intuitive user interface.
- . Troubleshooting should be easy.

Name

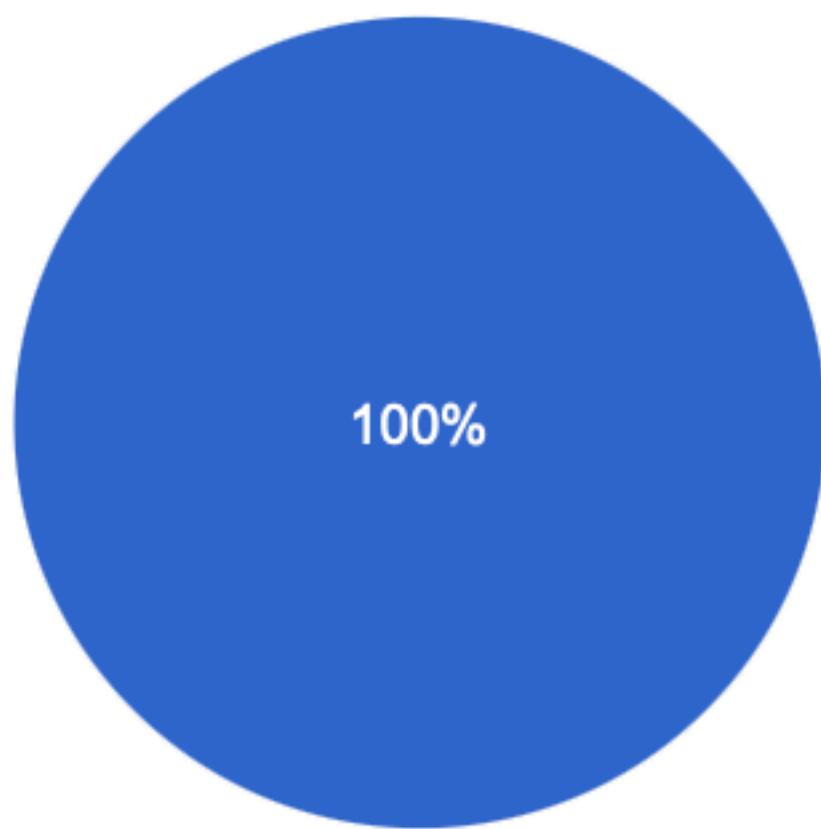
1 response

بولا أمير عبد المسيح

### Did you use any software before ?

 Copy

1 response

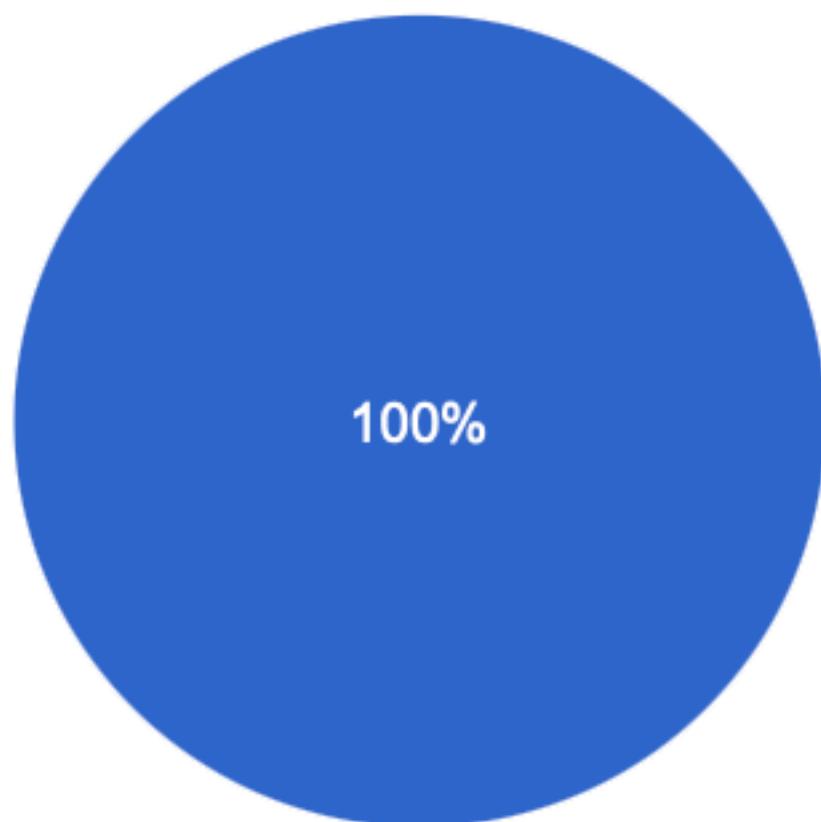


- Yes, I did
- No, I didn't

### How would you rate the ease of using point-of-sale (POS) system?

 Copy

1 response

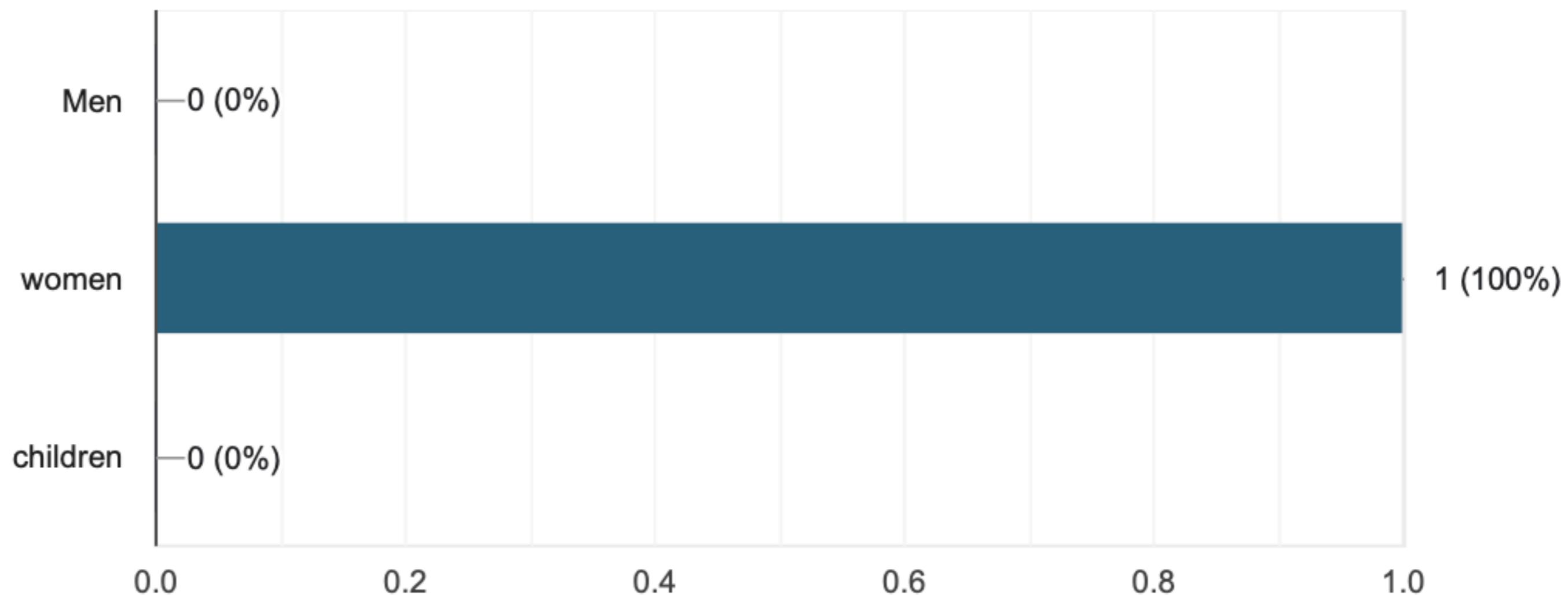


- Very easy
- Somewhat easy
- Neutral
- Somewhat difficult
- Very difficult

## What are the clothes' categories in the store ?

Copy

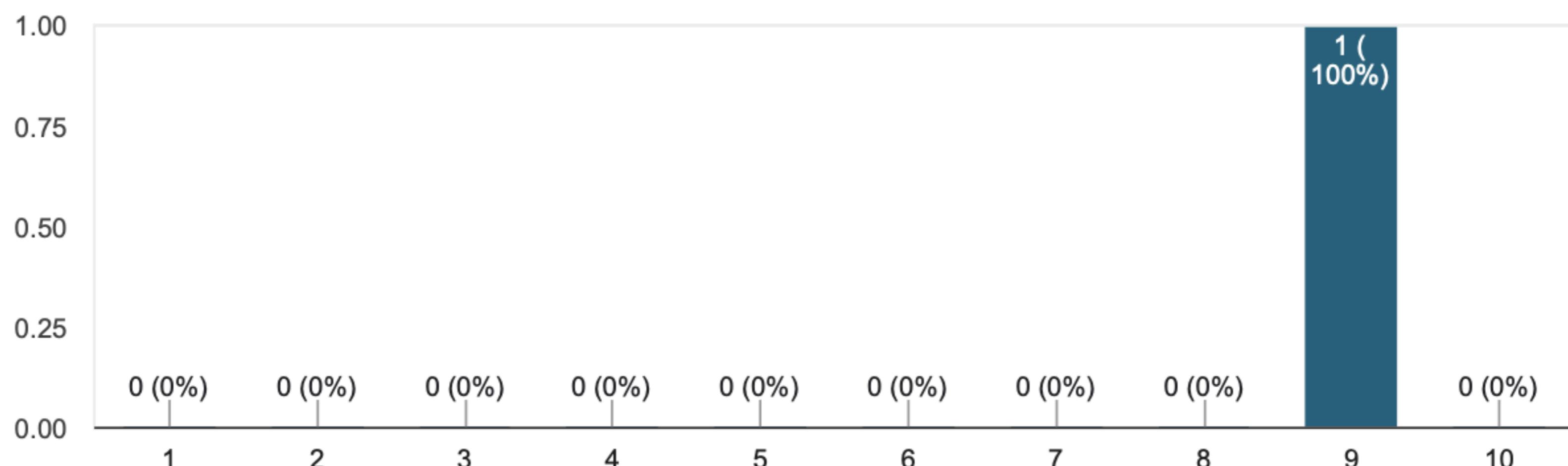
1 response



## How satisfied are you with the system's ability to handle customer inquiries?

Copy

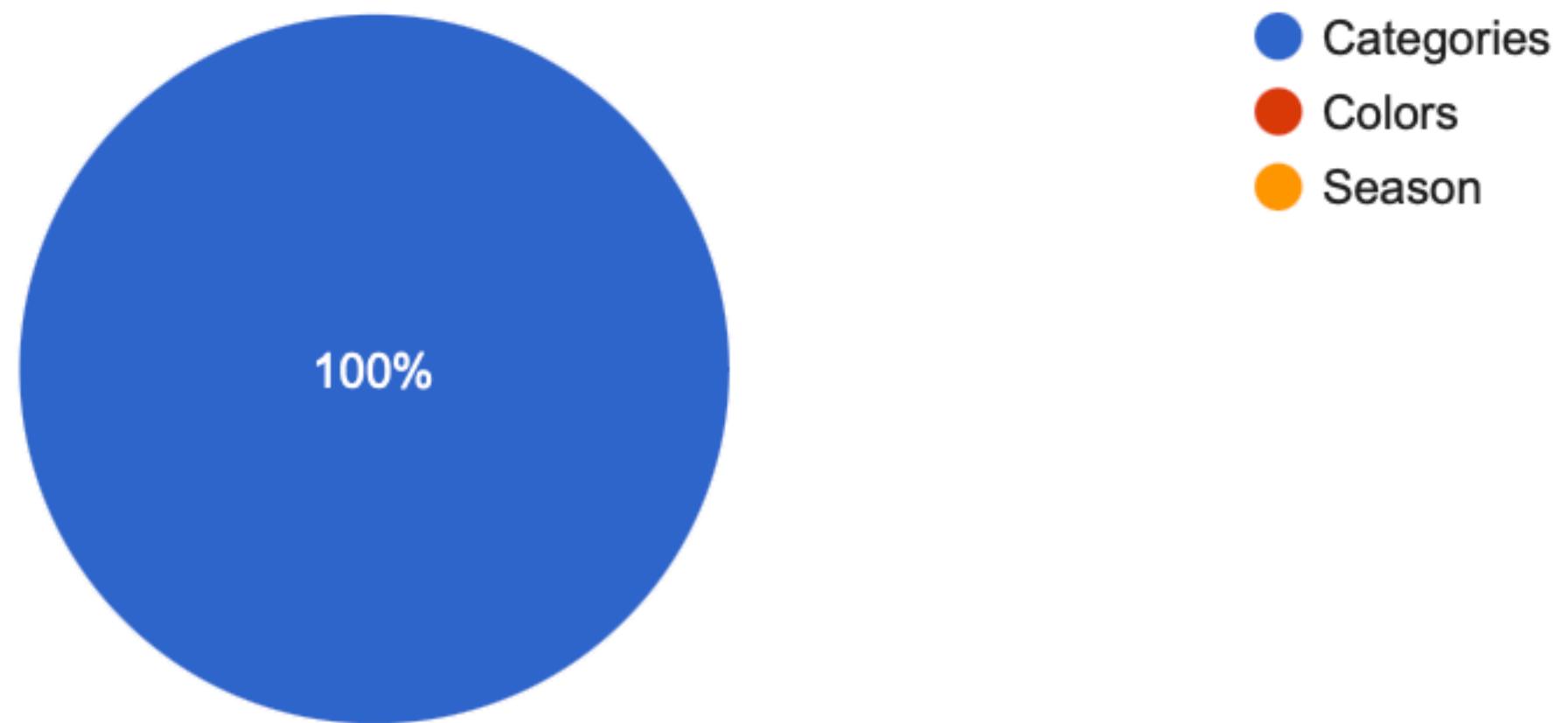
1 response



## What do you prefer the data to be classified according to...

 Copy

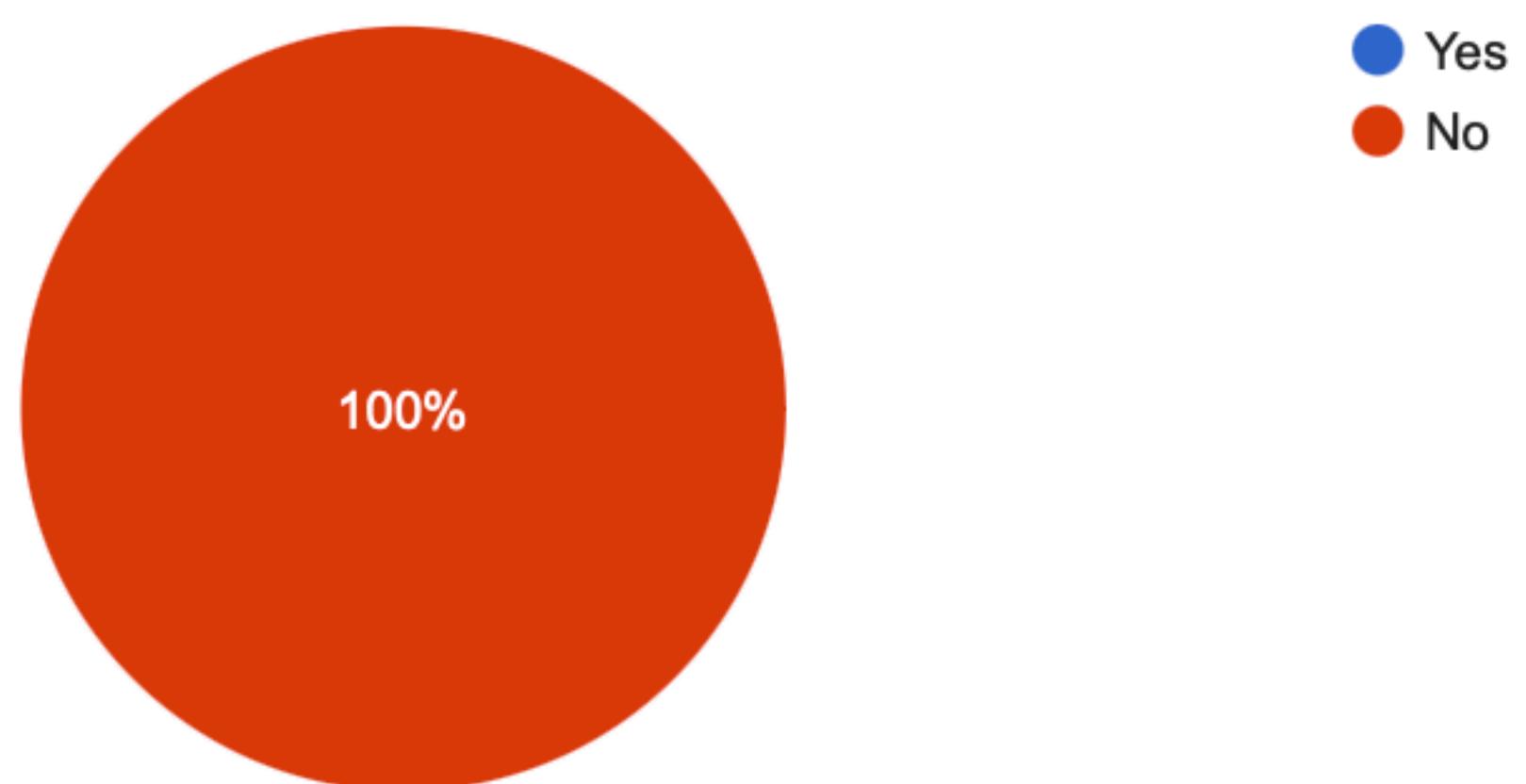
1 response



## Do you need to be alerted if a product is out of stock ...

 Copy

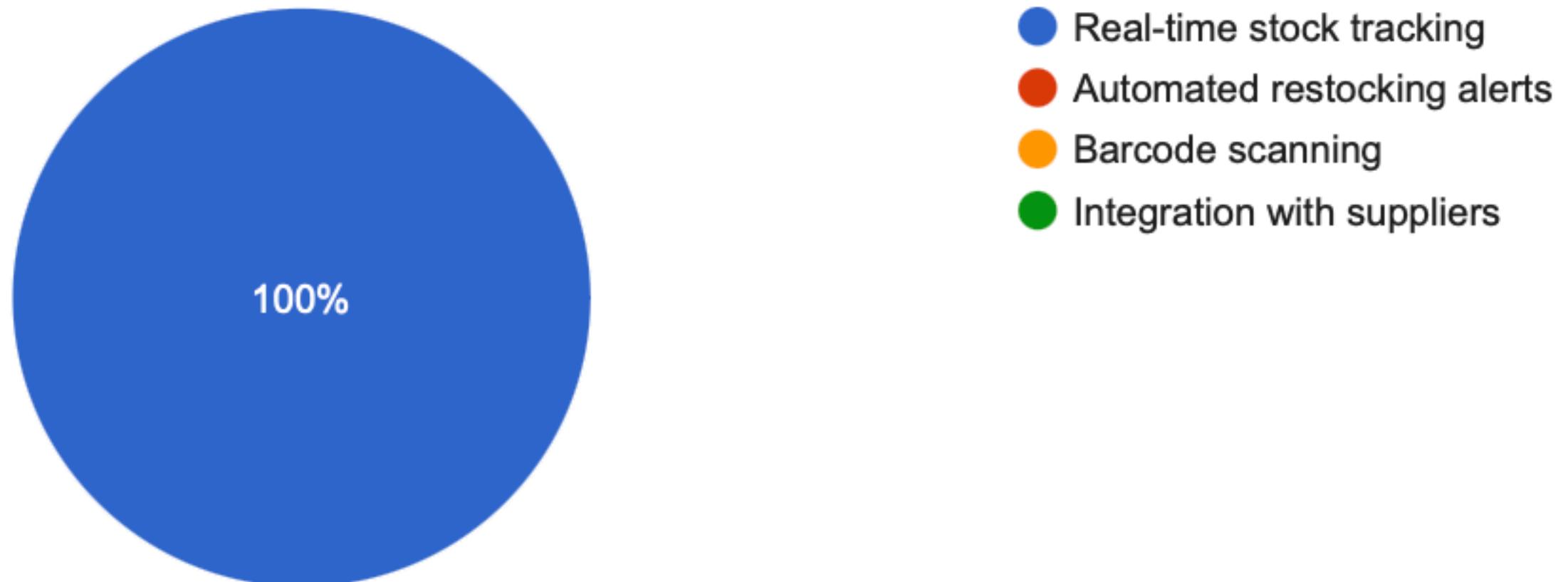
1 response



## Which feature would you find most helpful for managing inventory?

 Copy

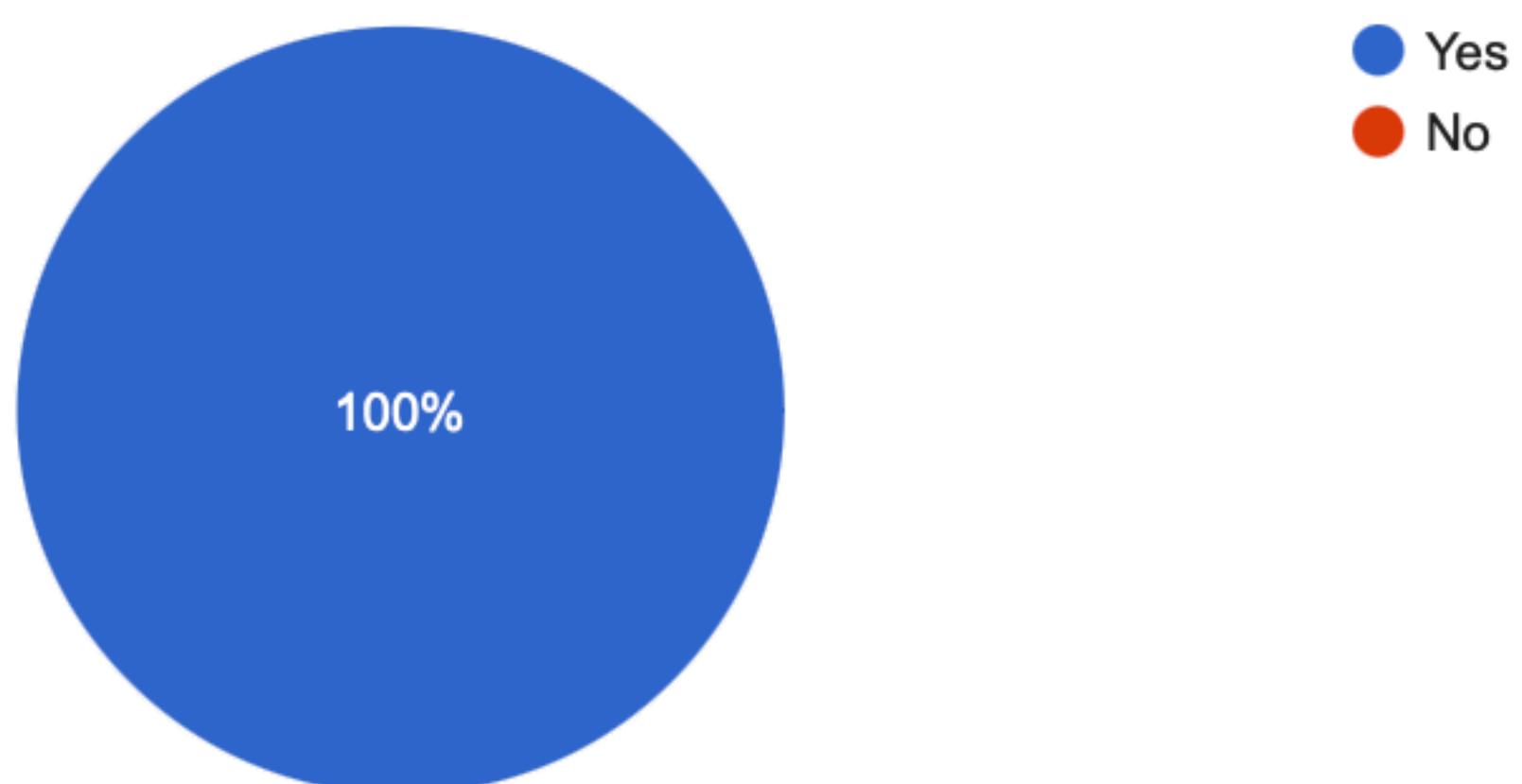
1 response



## Do you have the necessary tools and resources to perform your tasks effectively ?

 Copy

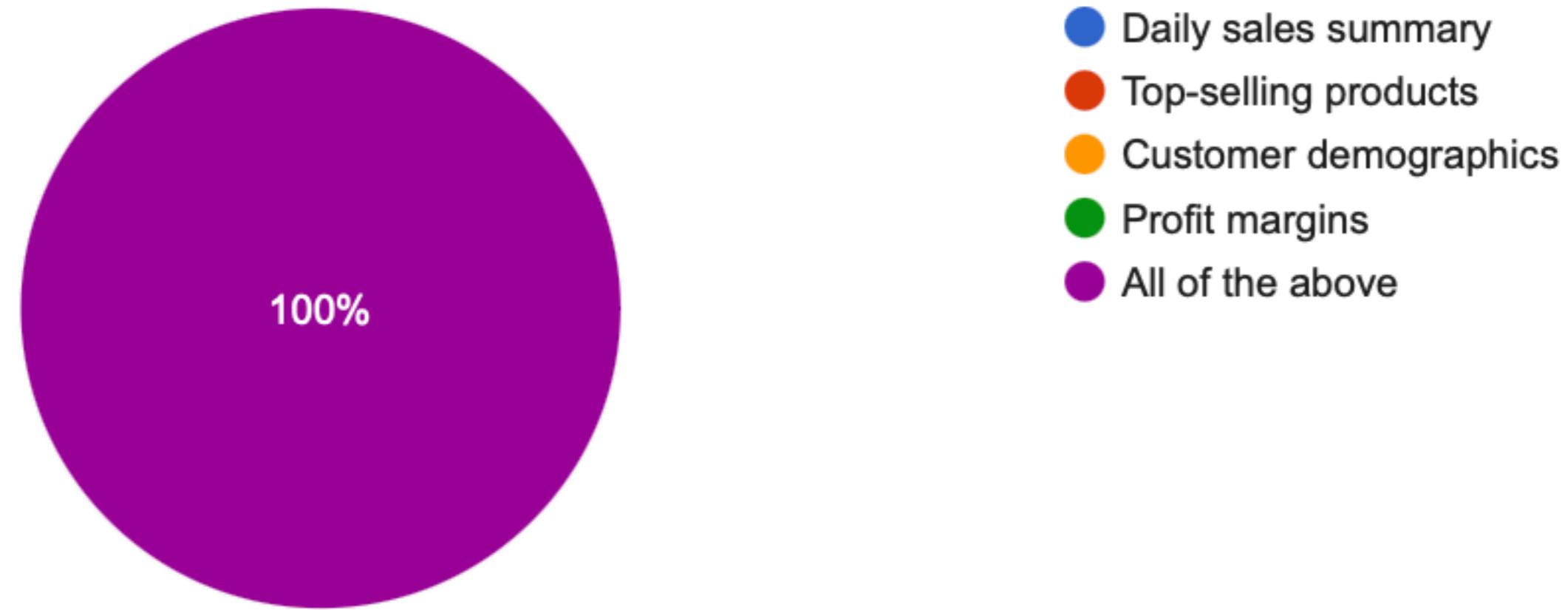
1 response



## What type of sales reports would be most valuable for decision-making?

 Copy

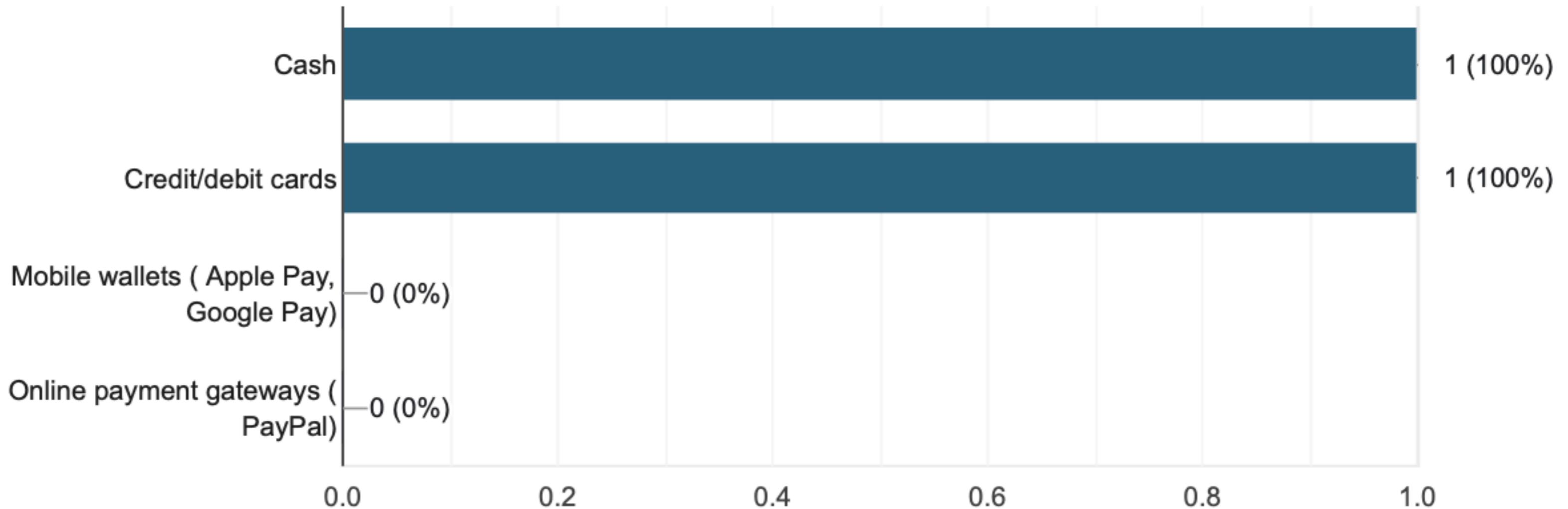
1 response



## Which payment method do you think is most convenient for customers?

 Copy

1 response



## Name

1 response

بولا أمير عبد المسيح

## What changes or enhancements would you recommend to add in our system?

1 response

I recommend that the system should provide easier maintenance and a more enhanced performance

## Which security feature is most important for the system?

1 response

The most important security feature is the data security feature, to insure that sensitive information such as customer data, stock data and transaction records are protected and maintained

## Have you encountered any issues with processing transactions or using the technology in the existing system ?

1 response

Yes, the maintenance of the system is complex which requires the assistance of IT technicians from the system company

## **How often do you encounter out-of-stock items?**

1 response

It depends on the season, but on average, we encounter out-of-stock items every week

## **Is the inventory system accurate in reflecting available stock?**

1 response

Yes, it is

## **How user-friendly is the POS system?**

1 response

The POS system is pretty user-friendly and easy to use

## **Have you generated reports or analyzed sales data using the system?**

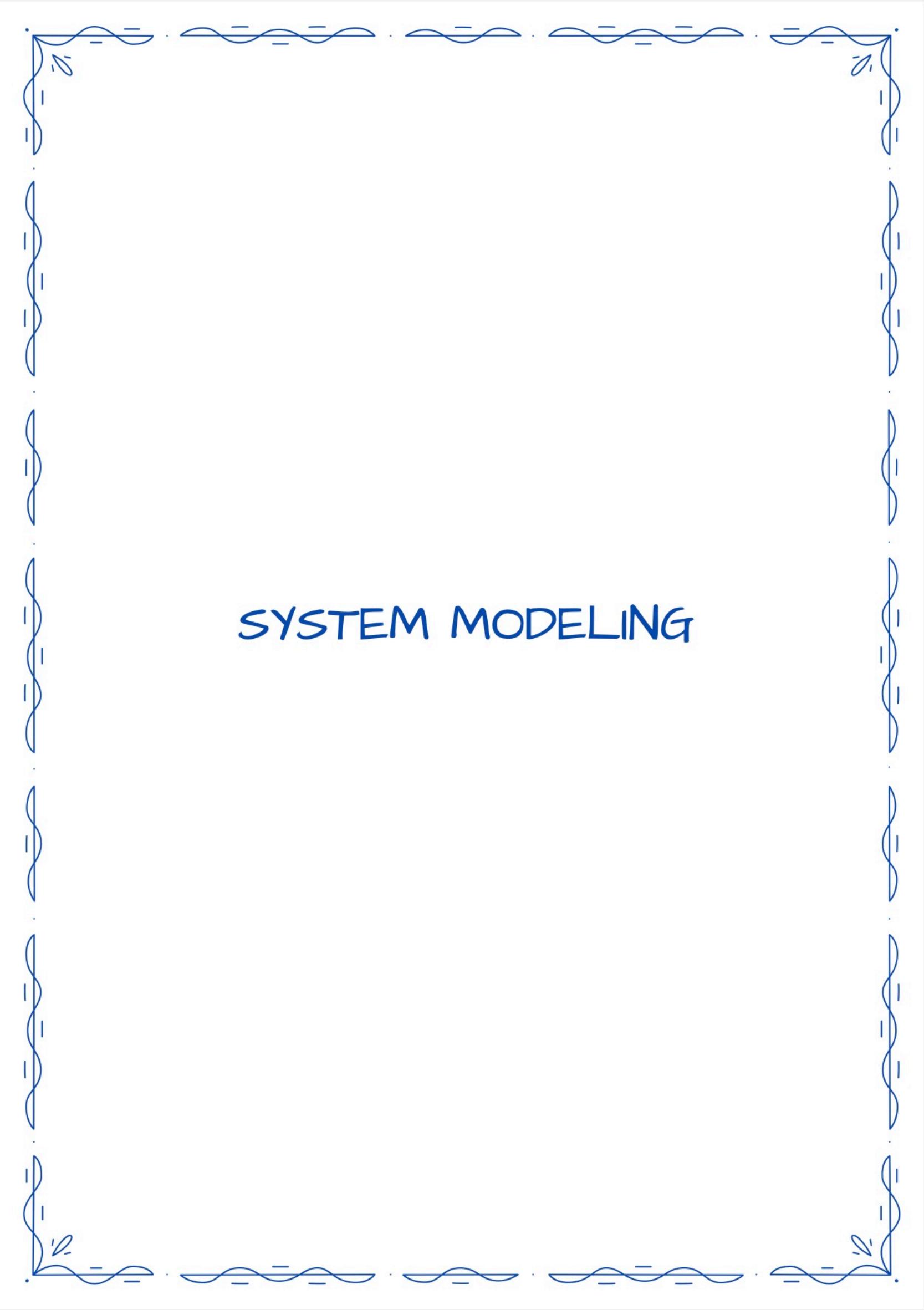
1 response

Yes I have used it to track daily sales, determine over/short stock and manage inventory

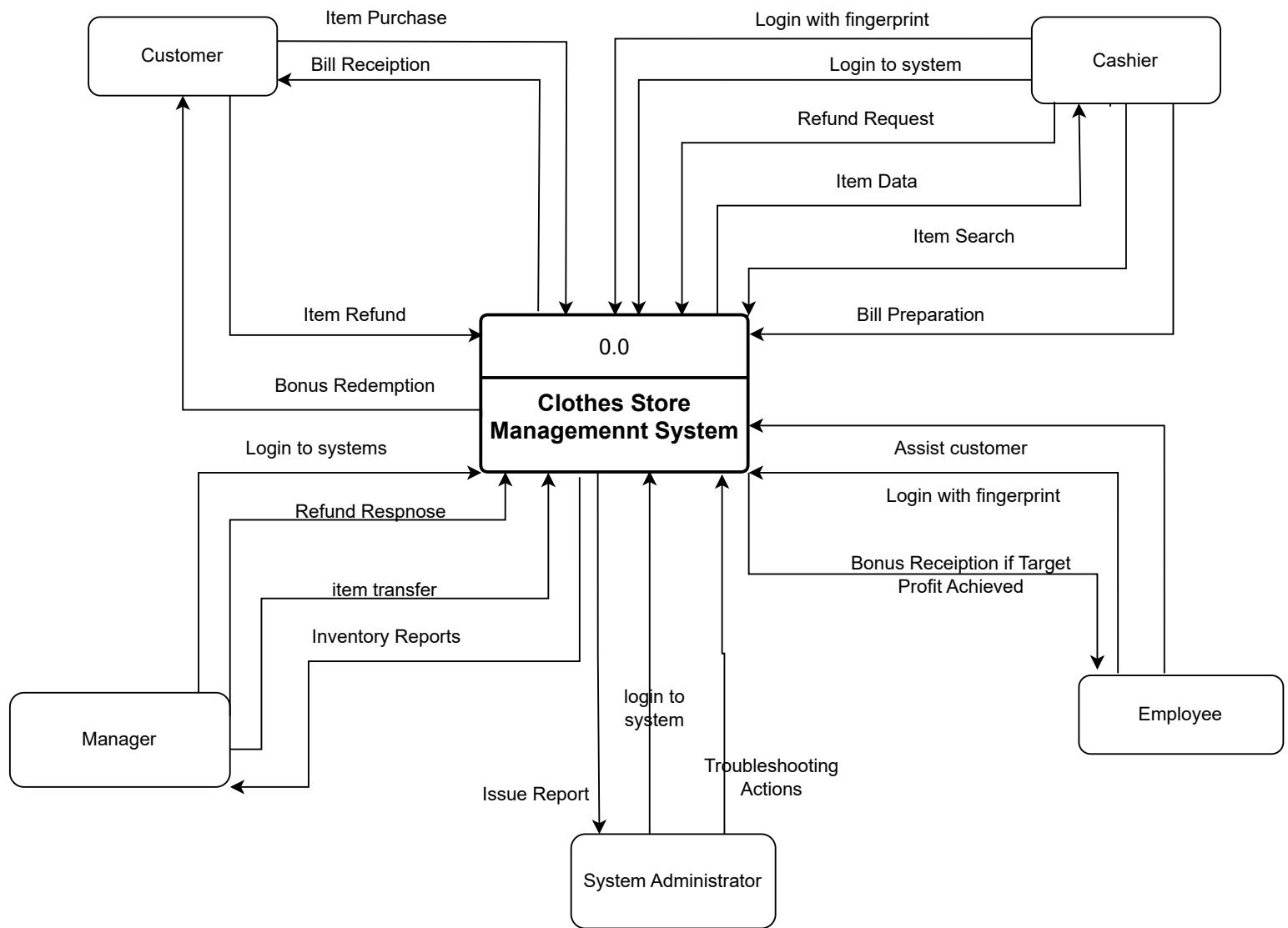
Are there any functionalities you find particularly useful or challenging?

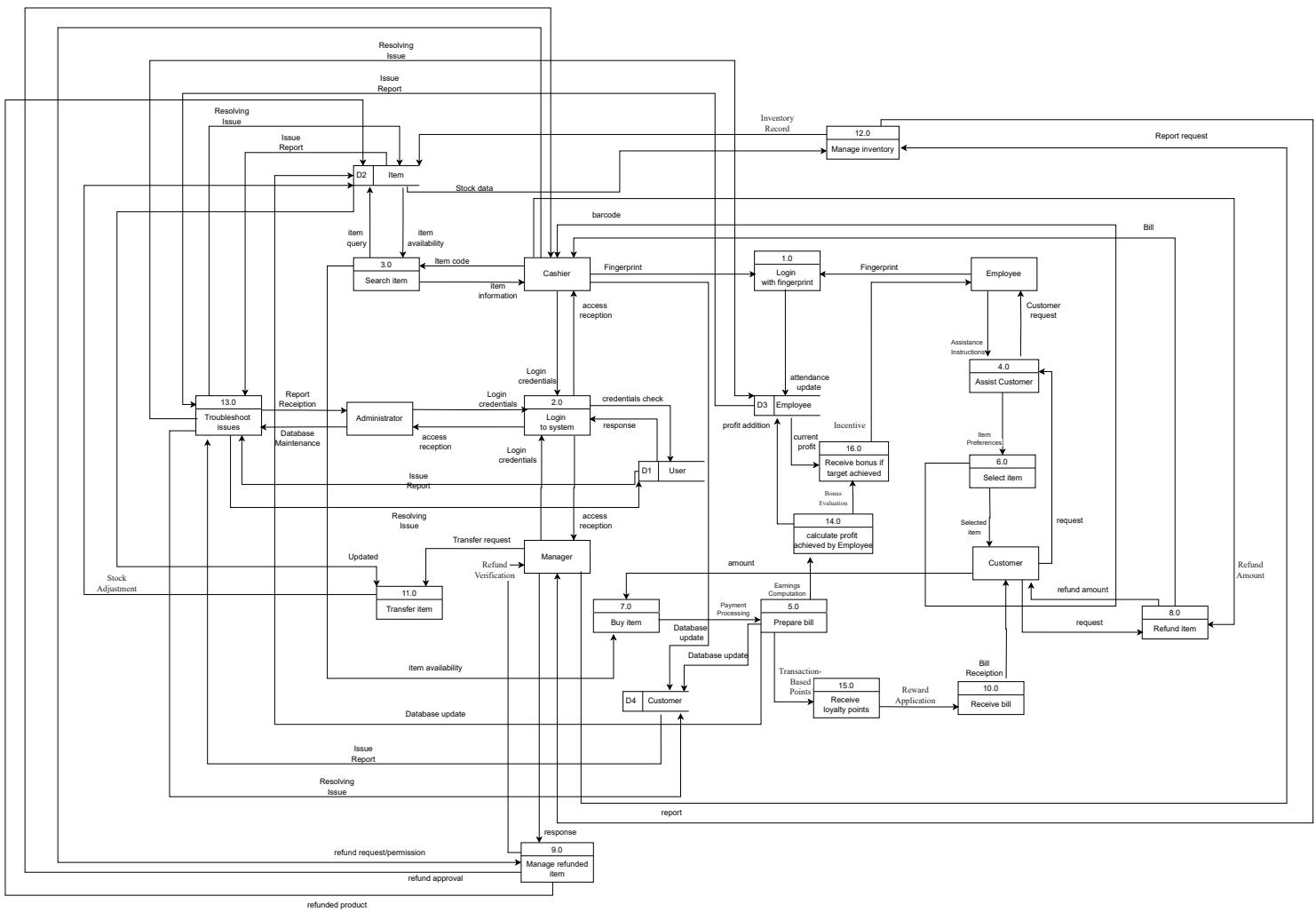
1 response

For me, POS is the most useful functionality in the system

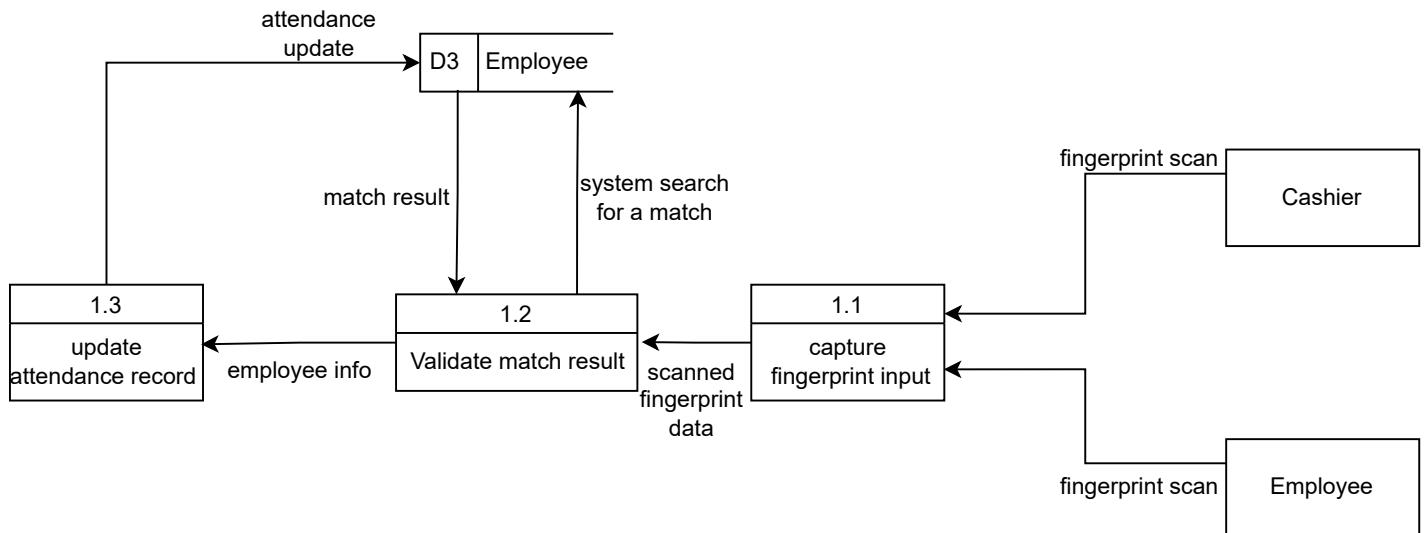


# SYSTEM MODELING

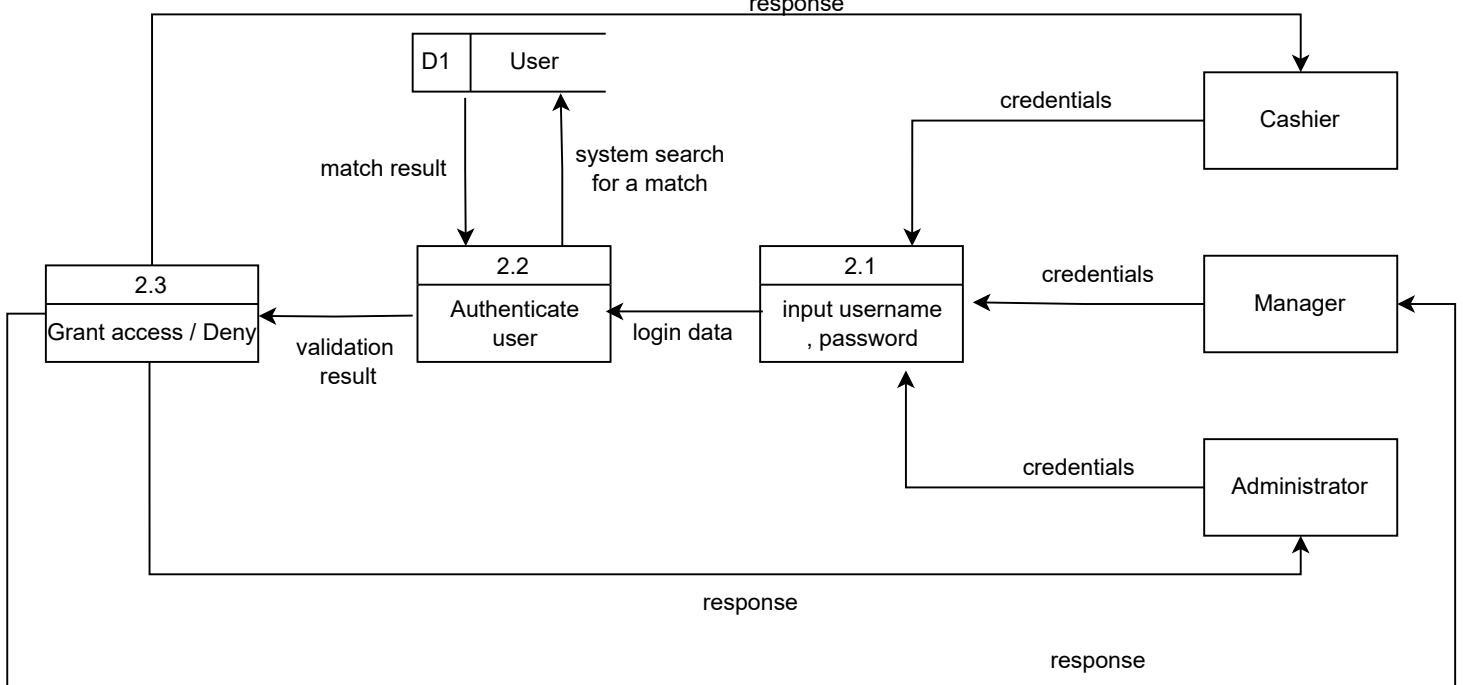




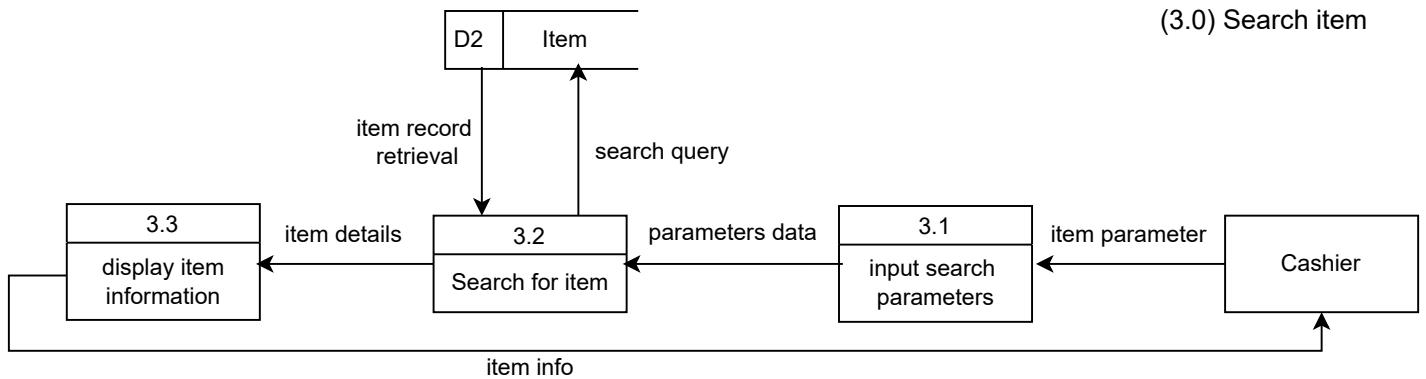
### (1.0) Login with fingerprint



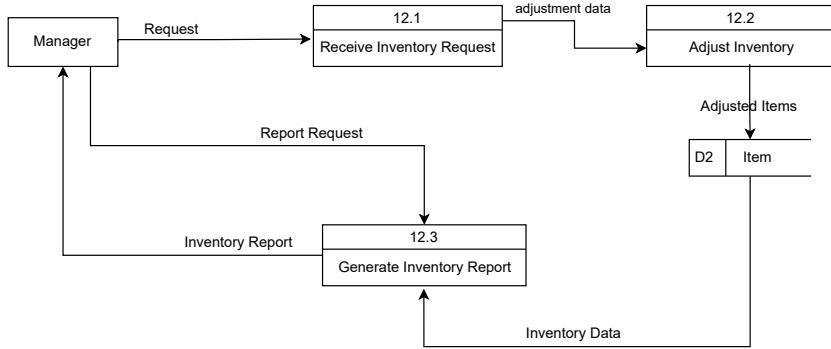
### (2.0) Login to system



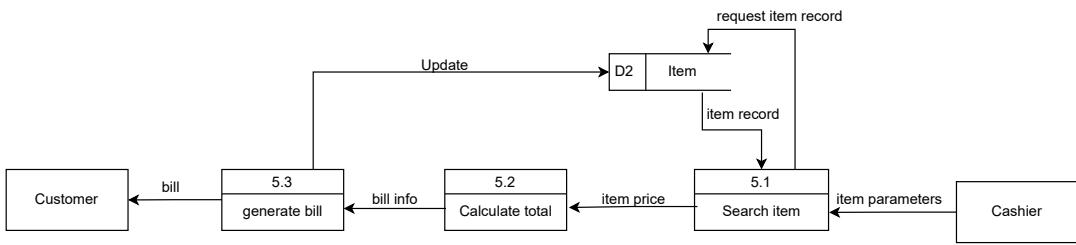
### (3.0) Search item



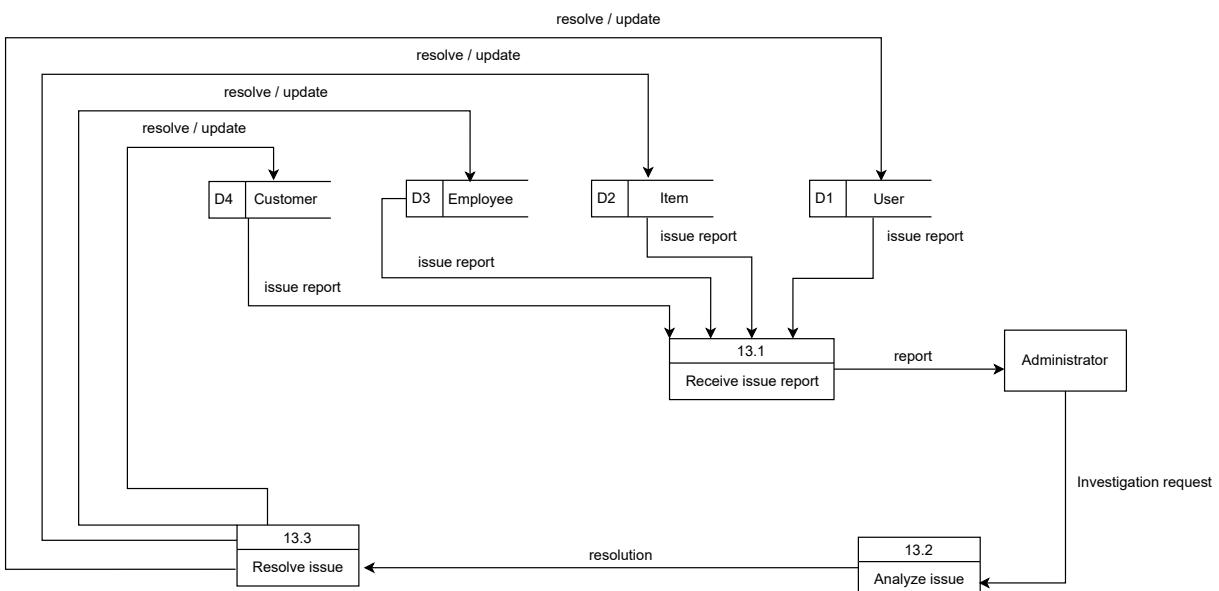
(12.0) Manage Inventory

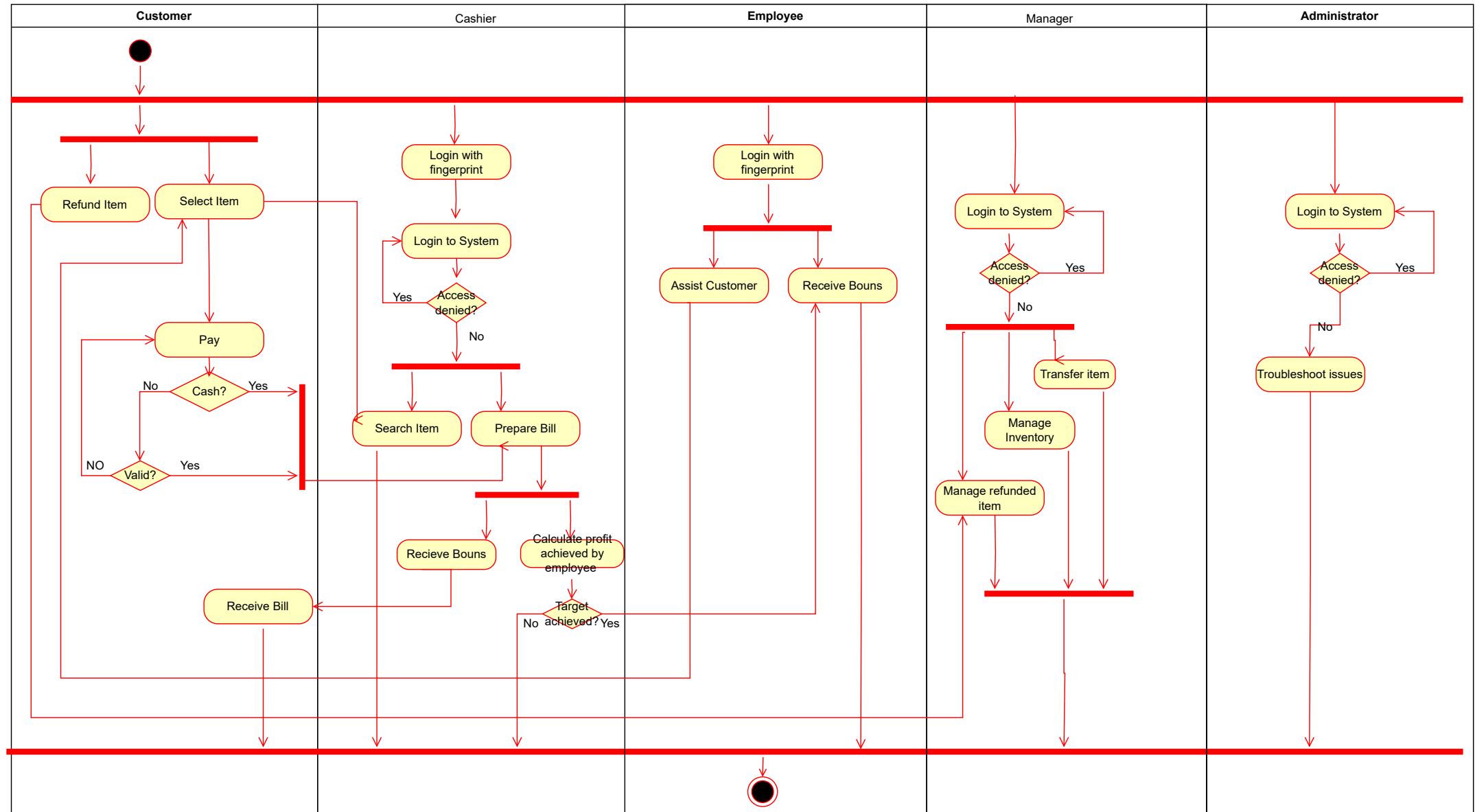


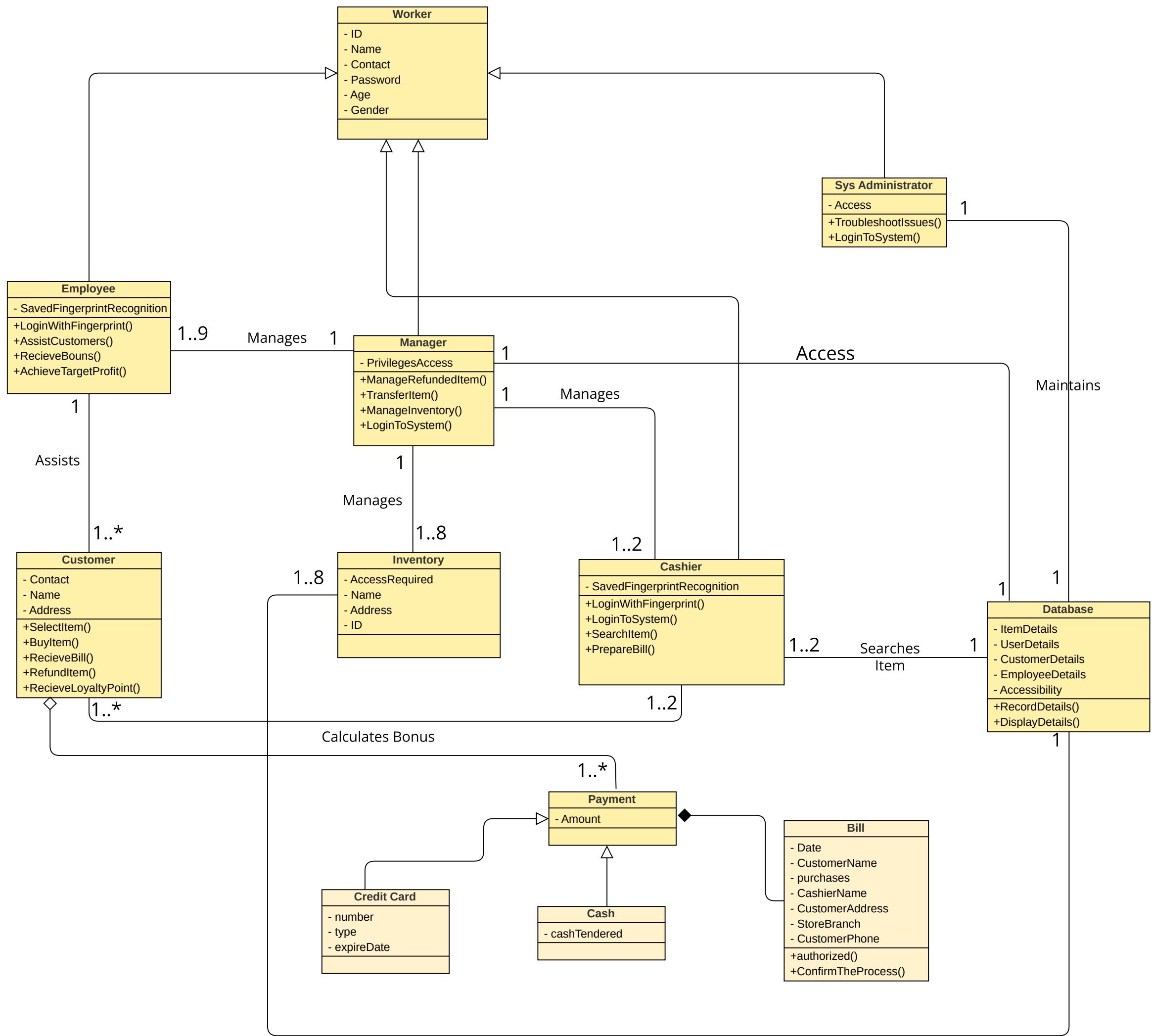
(5.0) prepare bill

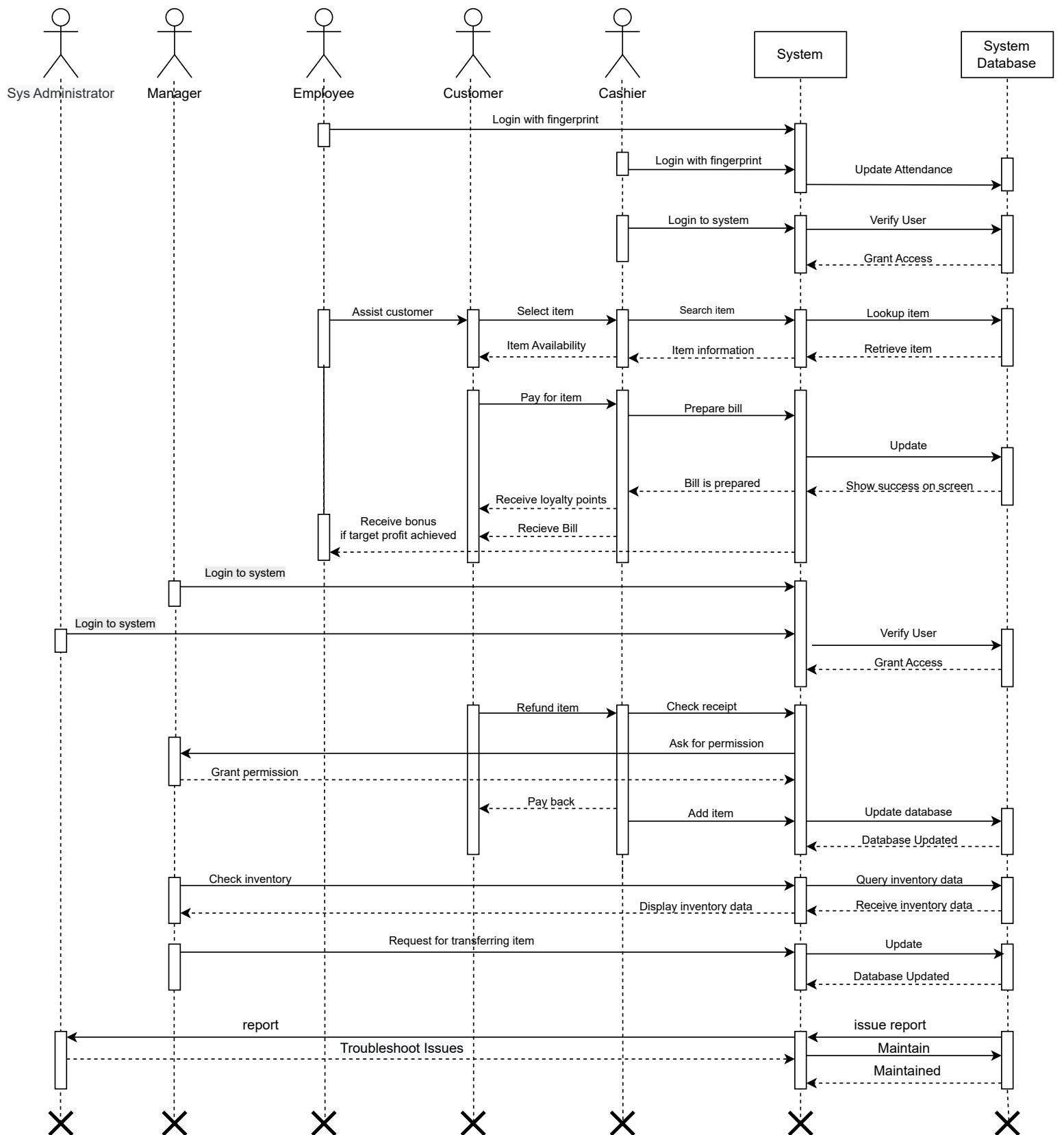


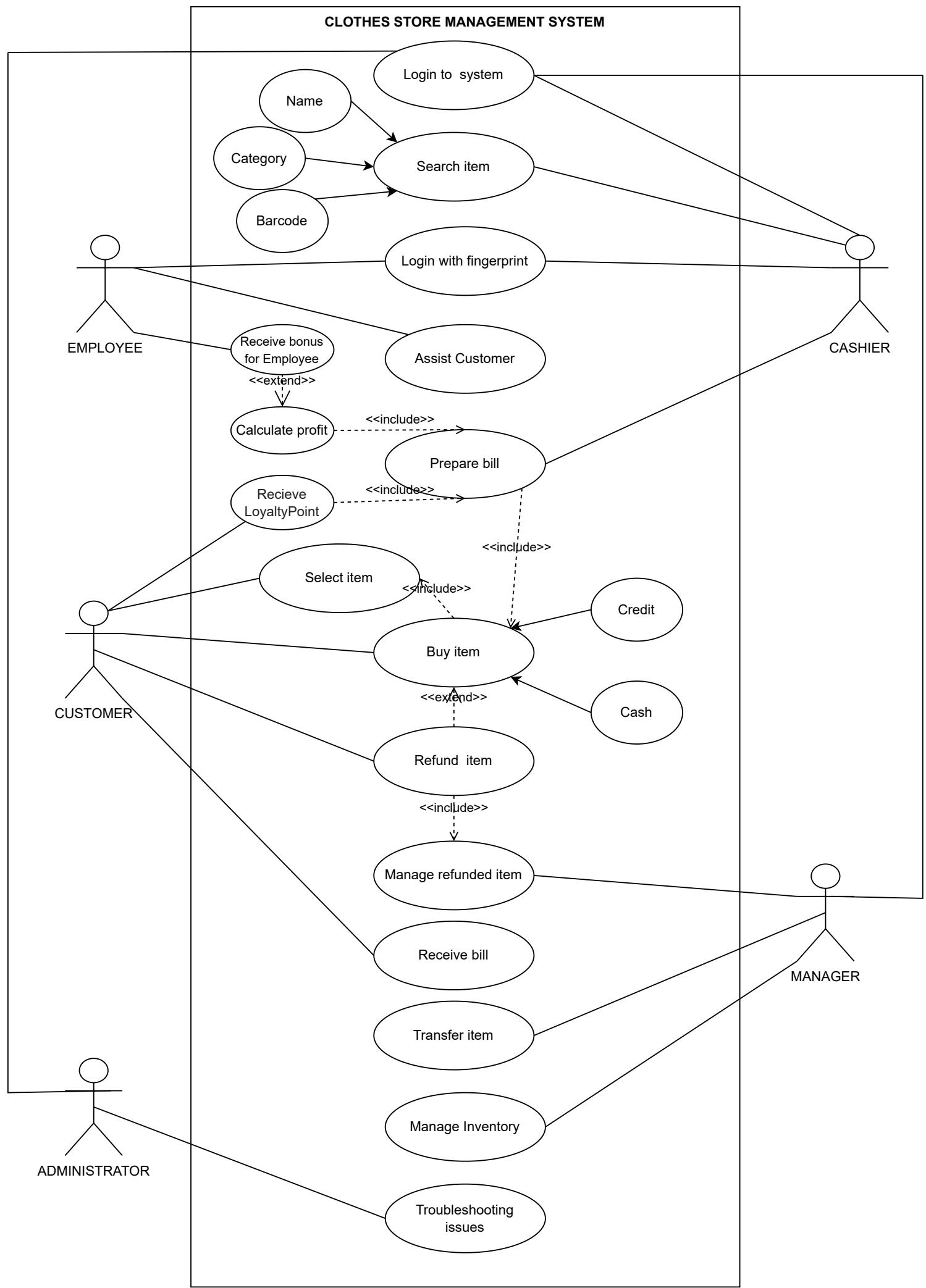
(13.0) Troubleshoot Issues











## Flow of event

---

# 1

Use case : Login to System

Actors: Cashier, Manager , Administrator

Description: The cashier / Manager / Administrator logs into the system by entering his username and password. Upon successful authentication, they gain access to the cashier interface, enabling him to perform his tasks

# 2

Use case : Search Item

Actors: Cashier

Description: When a customer wants to buy an item he/she has to give it to the cashier to tell him/her the price and output the receipt.

# 3

Use case : Login with fingerprint

Actors: Employee , Cashier

Description: when any employee / cashier starts his/her work he has to login to the system to prove his/her attendance.

# 4

Use case : Assist Customer

Actors: Employee

Description: When a customer is shopping and selecting items, an employee tries to help them with searching an item for them or checking the item's price, if the customer buys the item he receives a bonus.

# 5

Use case : Prepare Bill

Actors: Cashier

Description: The cashier initiates the billing process by scanning the selected items. The system calculates the total amount, including taxes and discounts if applicable, and generates a bill. This bill contains all purchase details, item quantities, and the final price to be paid by the customer.

# 6

Use case : Receive Loyalty points

Actors: Customer

Description: When a customer completes a purchase, the system evaluates whether the transaction qualifies for loyalty points. If eligible, the calculated points are added to the customer's loyalty account, encouraging repeat business and customer engagement.

# 7

Use case: Calculate profit

Actors: Cashier

Description: The cashier initiates the profit calculation process to evaluate the individual performance of employees. The system gathers data related to each employee's sales activity, including the number of items sold, total revenue generated.

# 8

Use case: Receive Bonus for Employee

Actors: Employee

Description: An employee becomes eligible for a bonus when they assist customers in a way that contributes to meeting or exceeding a predefined profit target. The system tracks each employee's sales performance and calculates the profit generated through their interactions. Once the employee reaches the target profit threshold, the system automatically flags them for a bonus.

# 9

Use case: Select item

Actors: Customer

Description: It is mandatory for the customer to select an item before buying it.

# 10

Use case : Buy item

Actors: Customer

Description: After selecting items the customer buys/pays them cash or credit and receives a bonus.

# 11

Use case : refund item

Actors: customer

Description: The customer presents the item and the receipt, and the cashier verifies eligibility and ask for manager permission before starting the refund process

# 12

Use case : Manage refund items

Actors: Manager

Description: The store manager grants permission to the refund process, and manages refunded items by returning resalable ones to inventory and the system.

# 13

Use case : Receive Bill

Actors: Customer

Description: The customer receives the prepared bill from the cashier, either as a printed receipt. This bill serves as proof of purchase and includes details about the items bought, the payment method used, and any loyalty points earned.

# 14

**Use case:** Transfer Items

**Actors:** Manager

**Description:** Only the manager is responsible for transferring items between branches.

# 15

**Use case:** Manage inventory

**Actors:** Manager

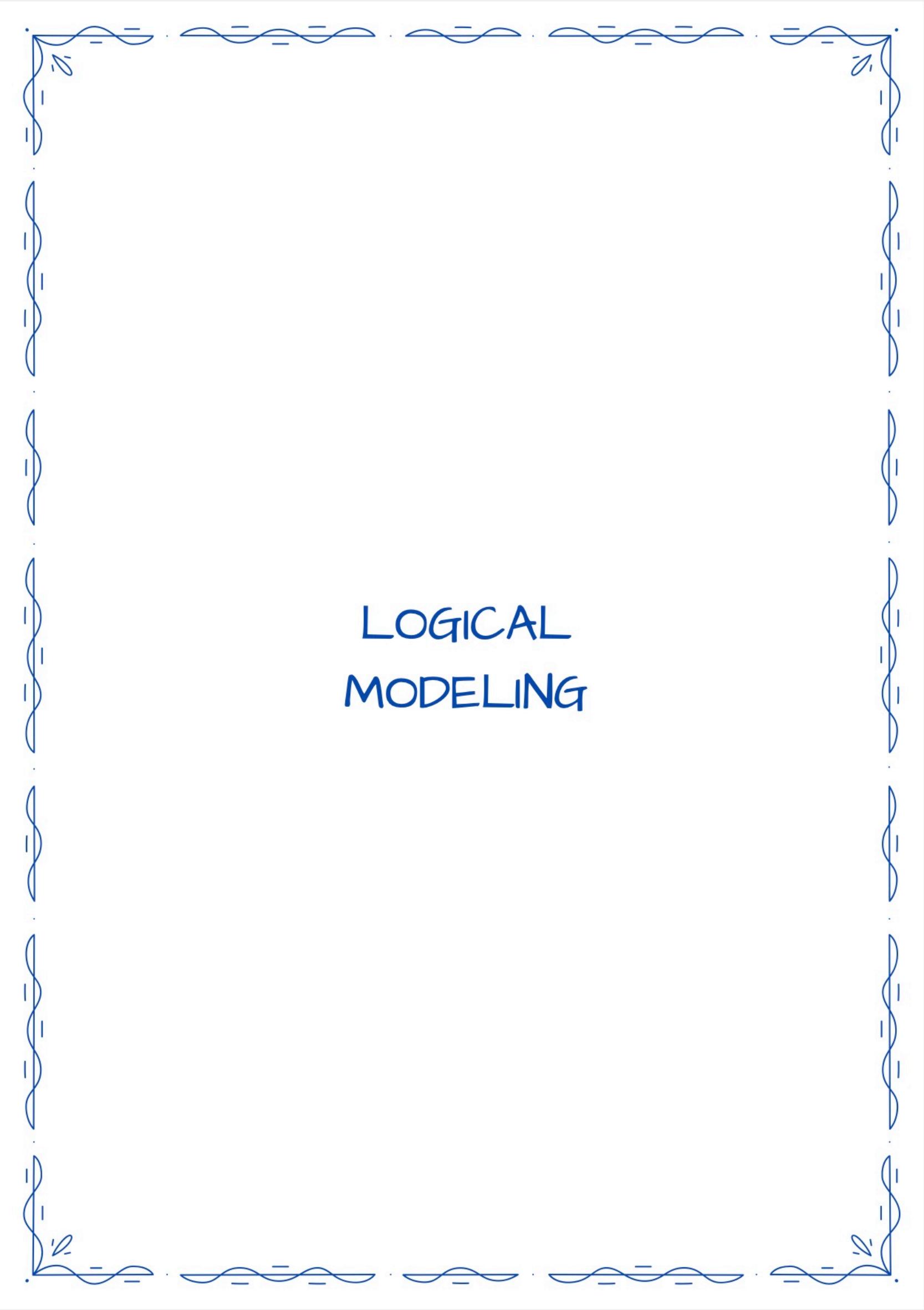
**Description:** A committee comes from the warehouse management, consisting of 6 individuals, including the head of inventory, and they conduct a search for the goods, and someone from the branch management counts and sees if the two numbers are identical. They enter them into an Excel sheet, review the deficit or excess, and carry out a reconciliation process between the sheet and the system.

# 16

**Use case:** Troubleshooting Issues

**Actors:** System Administrator

**Description:** The system administrator troubleshooting technical issues related to the system to resolve hardware and software issues



# LOGICAL MODELING

## Process 1.0: Login with Fingerprint

Do

    READ next Employee-Name-Record  
    If matching Employee-Database

        THEN update attendance

UNTIL End-of-file

---

## Process 13.0: Troubleshoot Issues

DO

    BEGIN IF

        IF there's any issue found in any database.

            THEN SOLVE the issue existing.

    END IF

UNTIL End-Of-File

---

## Process 5.0: Prepare Bill

BEGIN Prepare Bill

FOR EACH Item IN Selected\_Items

    QUERY Item Database FOR Item\_Information

    ADD Item TO Bill

END FOR

CALCULATE Subtotal is equal to sum of Item\_Prices

IF Customer has Loyalty\_Points

    APPLY Discount to Subtotal

END IF

CALCULATE Taxes is equal to Subtotal multiplied by Tax\_Rate  
CALCULATE Total\_Amount is equal to Subtotal plus Taxes

GENERATE Bill with Bill\_Information  
FOR EACH Item in Bill  
    UPDATE Item Database  
END FOR

UPDATE Items\_Database with Transaction\_Details

PRINT Bill  
END Prepare Bill

---

#### Process 10.0: Receive Bill

BEGIN Receive Bill  
FOR EACH Bill in Prepared\_Bills  
    READ Bill\_Information from Item\_Database and  
    Customer\_Database  
        DISPLAY Bill\_Information to Customer  
        IF Customer prefers Email THEN  
            SEND Receipt to Customer Via Email  
        ELSE IF Customer prefers Sms THEN  
            SEND Receipt to Customer Via Sns  
        END IF  
    END FOR  
END Receive Bill

---

## Process 15.0: Receive Loyalty Points

Do  
  QUERY Customer\_Database for Customer\_information  
  IF Customer information in Customer\_Database  
    RECEIVE Loyalty Points from System  
    SEND Loyalty Points to customer  
  ELSE  
    ADD Customer\_information to Customer\_Database  
    RECEIVE Loyalty Points from System  
    SEND Loyalty Points to customer  
  
  UNTIL End-of-Transaction

---

## Process 8.0: Refund Item

READ Refund-Request FROM Customer  
DO  
  READ Item-Information FROM Items-Database  
  READ Purchase-Information FROM Database  
  BEGIN IF  
    IF Item is eligible for refund AND within refund policy period  
    THEN SEND Refund-Request TO Manager  
    WAIT FOR Manager-Permission  
    BEGIN IF  
      IF Manager-Permission is Granted  
      THEN GENERATE Refunded-Item  
      UPDATE Inventory IN Database  
      NOTIFY Customer WITH Refund-Details  
    END IF  
  END IF  
  UNTIL Refund-Request is resolved

---

## Process 2.2: Authenticate User

```
BEGIN Authentication
READ credentials FROM Process 2.1
QUERY D1 (User Database) FOR
matching username AND password
IF credentials match
GENERATE "Access granted" response
ELSE
GENERATE "Access denied" response
END IF
SEND response TO Process 2.3
END
```

---

## Process 3.1: Input Search Parameters

```
READ search parameters FROM Cashier
VALIDATE parameters FOR completeness
UNTIL valid input
SEND parameters TO Process 3.2
```

---

## Process 3.3: Display Item Information

```
BEGIN Display
READ item details FROM Process 3.2
```

FORMAT data FOR readability

SHOW formatted information TO Cashier

END

---

### Process 12.3: Generate Inventory Report

DO

READ Report Request FROM Manager

RECEIVE current stock data FROM D2

COMPILE data INTO report

DISPLAY report TO Manager

END

---

### Process 12.2: Adjust Inventory

BEGIN Inventory Adjustment

READ adjustment instructions

MODIFY Item Inventory (D2) BASED ON instructions

GENERATE Inventory Update Confirmation

SEND confirmation TO Manager

# Process 1.0: Login with Fingerprint

Condition Stubs	Conditions / Courses of Action s	Rules							
		1	2	3	4	5	6	7	8
	Finger print is valid	Yes	Yes	No	No	Yes	Yes	No	No
	Check-in Time Within Shift	Yes	No	Yes	No	Yes	No	Yes	No
	Role	Employee	Employee	Employee	Employee	Cashier	Cashier	Cashier	Cashier
Action Stubs	Record Attendance	X				X			
	Reject Attendance / Deduct Salary		X	X	X		X	X	X

## Indifferent Condition: Role

Condition Stubs	Conditions / Courses of Actions	Rules			
		1	2	3	4
	Fingerprint is valid	Yes	Yes	No	No
	Check-in Time Within Shift	Yes	No	Yes	No
	Role	-	-	-	-
Action Stubs	Record Attendance	X			
	Reject Attendance / Deduct Salary		X	X	X

## Input Username, Password

	Conditions/ course of actions	1	2	3	4
Condition stubs	Username entered	Y	Y	N	N
	Password entered	Y	N	Y	N
Action stubs	Process to Auth	✗			
	Show error message		✗	✗	✗

Username entered :

Y = Yes

N = No

Password entered :

Y = Yes

N = No

indifferent condition: Password entered

	Conditions/ course of actions	1	2	3
Condition stubs	Username entered	Y	Y	N
	Password entered	Y	N	-
Action stubs	Process to Auth	✗		
	Show error message		✗	✗

## Login to system

	Conditions/ course of actions	1	2	3	4	5	6
Condition stubs	User type	C	C	M	M	A	A
	Credential	V	I	V	I	V	I
Action stubs	Grant Access	✗		✗		✗	
	Deny Access		✗		✗		✗

User type :

C = Cashier

M = Manager

A = System Administrator

Credentials :

V = Valid

I = Invalid

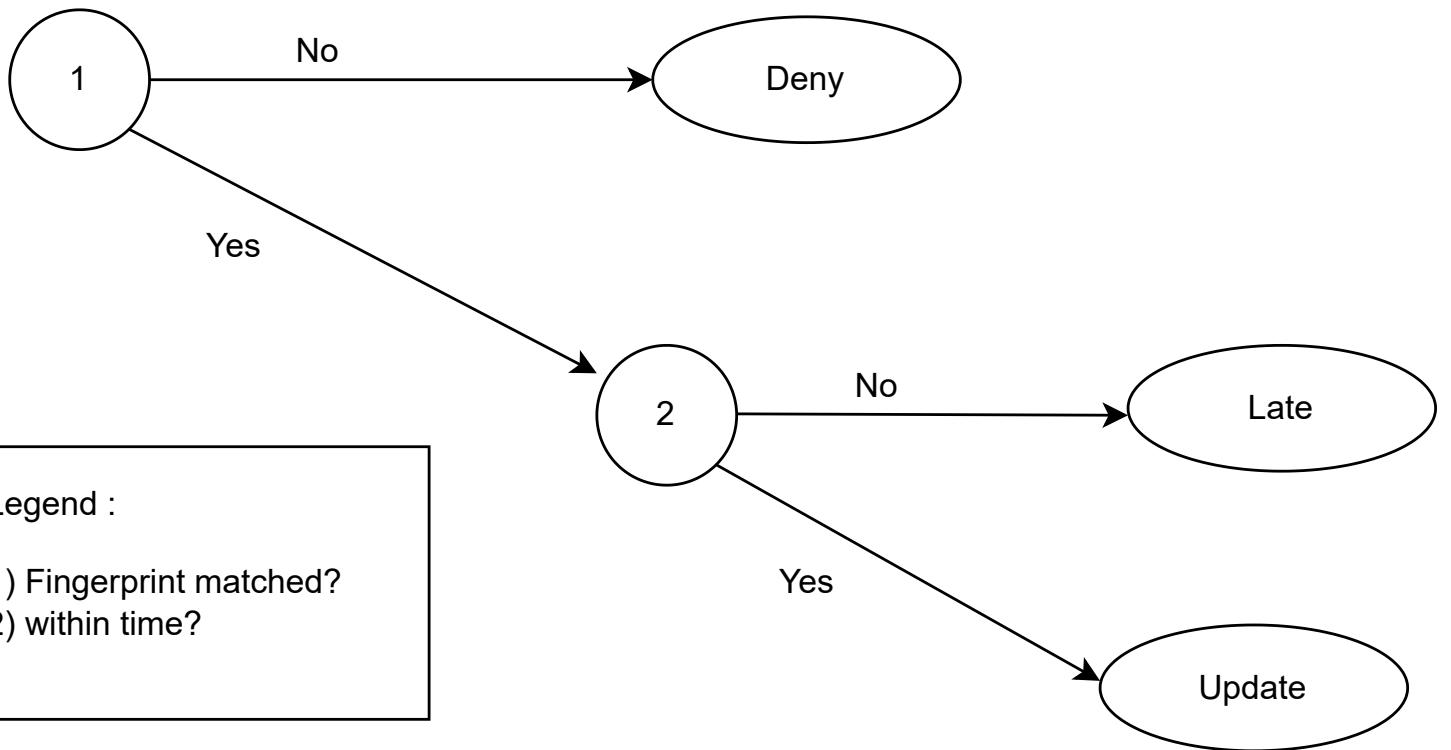
indifferent condition: User type

	Conditions/ course of actions	1	2
Condition stubs	User type	—	—
	Credential	V	I
Action stubs	Grant Access	✗	
	Deny Access		✗

	Rules	1	2	3	4	5	6	7	8
condition	code or name or category valid	no	no	no	no	yes	yes	yes	yes
	request details	no	no	yes	yes	no	no	yes	yes
	item available	no	yes	no	yes	no	yes	no	yes
action	show error	x	x	x	x				
	send code to check					x	x	x	x
	display details							x	x
	item information								x

## after indifferent condition

	Rules	1	2	3	4
condition	code or name or category valid	no	yes	yes	yes
	request details	-	no	yes	yes
	item available	-	-	no	yes
action	show error	x			
	send code to check		x	x	x
	display details			x	x
	item information				x

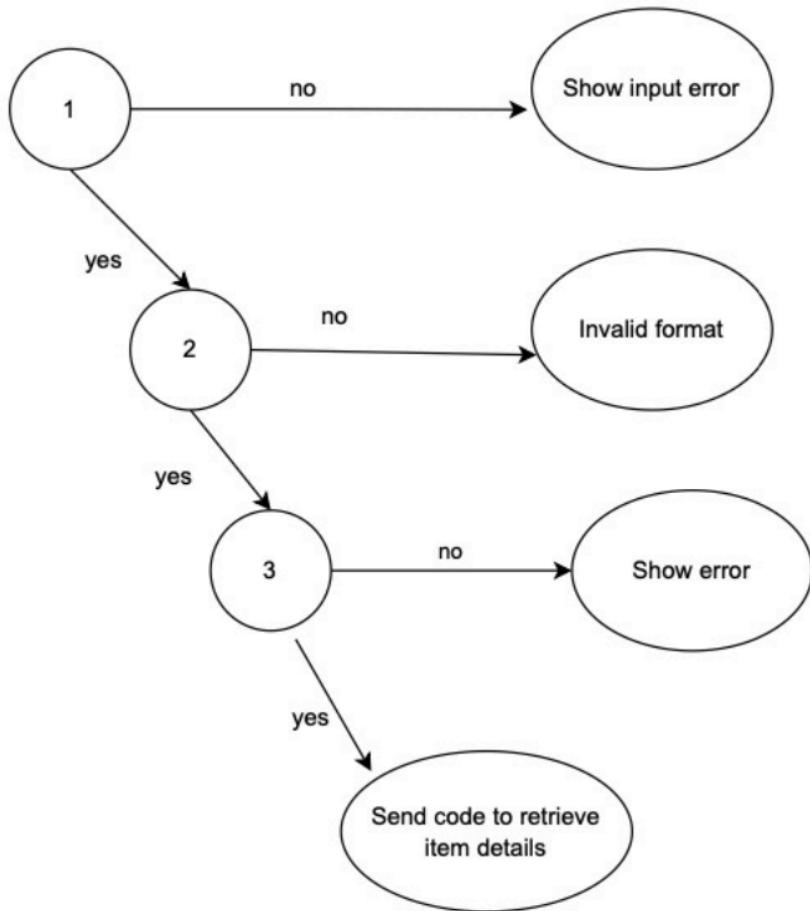


legend;

1) Receive item  
code

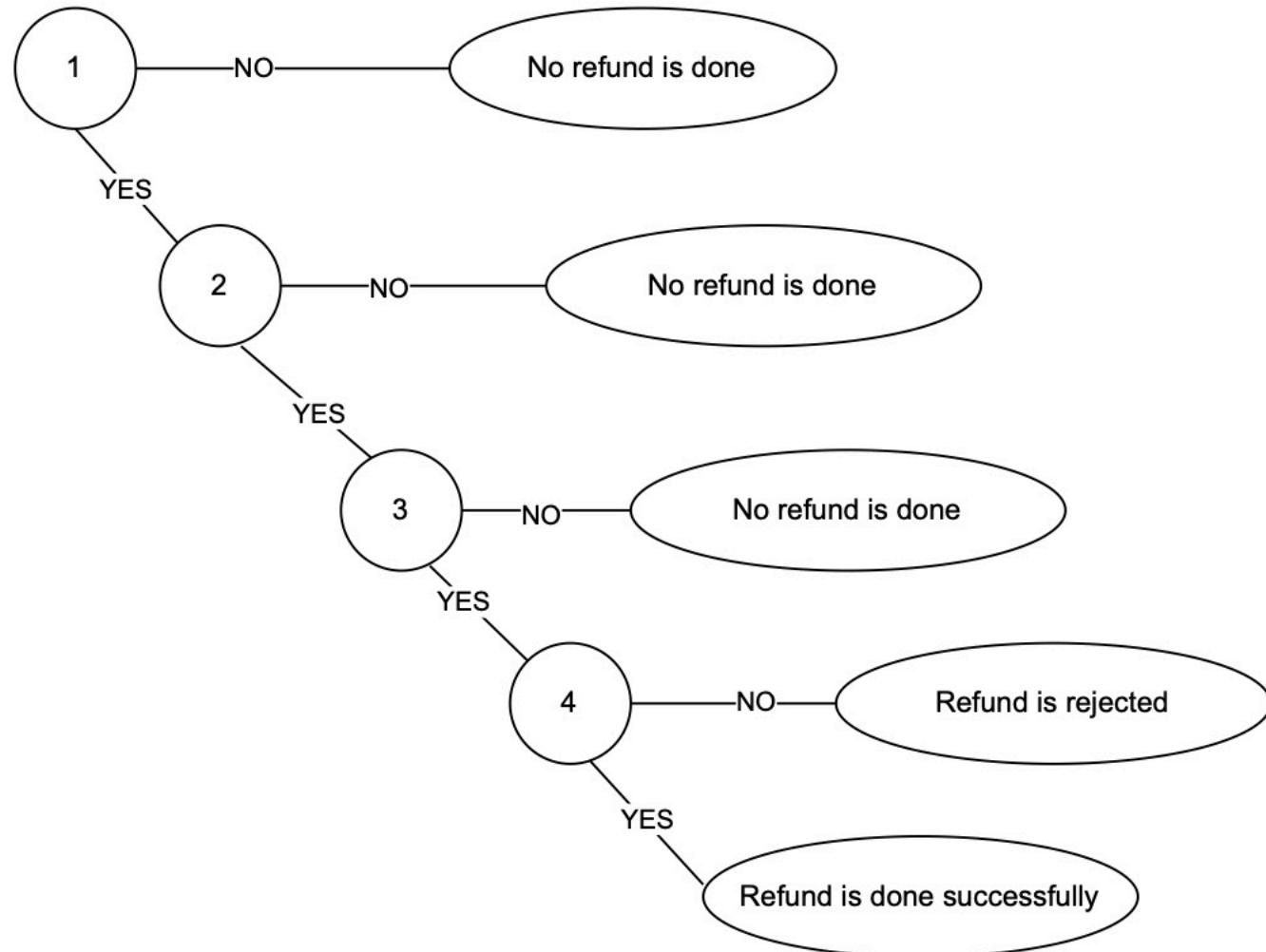
2) Validate data code  
item

3) Valid format



Legend:

- 1) Item doesn't exceed refund policy ?
- 2) Bill exists ?
- 3) Item is in a good state ?
- 4) Permission is accepted ?





# USER INTERFACE

Latoya



Please Login First

Username

Password

**Login**

*Cancel*

Cashier

cashier\_1      Mohammed | Cashier

LATOYA®  
Woman Wears

New Transaction      Search Product      Add Discount      Settle Payment      Clear Cart      Logout

No	Pcode	Description	Price	Qty	Total
					0.00

Transaction No  
202505101003  
Date  
5/10/2025  
Barcode  
 1  
Sale Subtotal 0.00  
Discount 0.00

02:24:14

Point Of Sales

## DASHBOARD

**DAILY SALES** 0.00 Daily Sales Total daily sales recorded in the system.

**TOTAL PRODUCT** 23 Total Product Total product recorded in the inventory.

**STOCK ON HAND** 164 Stock On Hand Total product stock on hand.

**Critical Items** 15 Critical items Total critical items recorded in the system.

**Dashboard**

**Product**

**In Stock**

**Record**

**Logout**

**NEW DENIM COLLECTION**

Point Of Sales

## Adjustments

Action :

Reference No 934799369 Pcode : Product code Qty :

Description : Product detail Remarks :

**Dashboard**

**Product**

**In Stock**

**Record**

No	Pcode	Barcode	Description	Category	Price	Stock On Hand
1	P001	654321	Elegant Leather Belt	Accessories	90.00	8
2	P002	654322	Vintage Chain Belt	Accessories	120.00	8
3	P003	654323	Casual printed hoodie	Casual	640.00	6
4	P004	123461	Elegant long-sleeve Top	Casual	325.00	8
5	P005	123462	Plain Button-Collar Top	Casual	450.00	8
6	P006	123463	Asymmetrical Top	Casual	325.00	8
7	P007	123464	Elegant gabardine dressress	Casual	1320.00	8
8	P008	123465	Asymmetrical Ruched DressAsymme...	Casual	865.00	8
9	P009	123466	Classic straight-leg pants	Pants	795.00	9
10	P010	123467	Relaxed linen pants	Pants	695.00	8
11	P011	123468	Milton wide-leg pants	Pants	525.00	3
12	P012	123469	Wide_Leg Jeans	Pants	735.00	0
13	P013	123470	High Waisted _ Crossover Jeans	Pants	795.00	6
14	P015	123472	Elegant One-Shoulder	Soiree	1950.00	9
15	P016	123473	"Scarlet "Twist Elegance Gown	Soiree	2450.00	3
16	P017	123474	Off Shoulder Metalic	Soiree	2750.00	7

**Logout** **Stock**  **Save**

Point Of Sales

## RECORDS

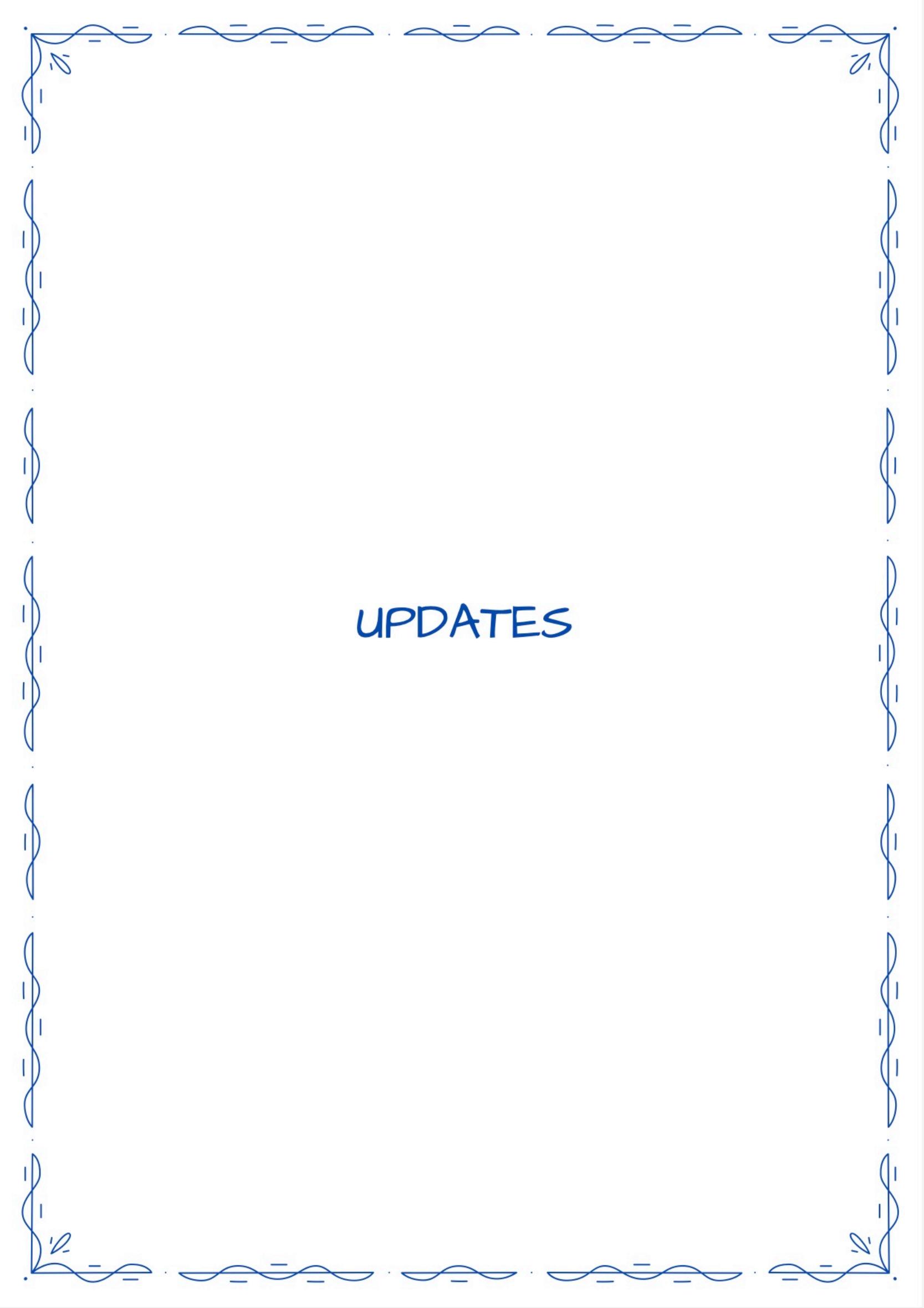
LATOYA®  
manager

Top Selling Sold Items Critical Stocks Inventory List Cancelled Order Stock In History

Filter By : From  To  Select sort type  

No	Pcode	Description	Qty	Total Sales

Logout Manage Record



UPDATES

## UPDATES

---

- Website : for online Customers

The screenshot shows the homepage of the LATOYA website. At the top, there is a navigation bar with the brand name "LATOYA" on the left, and "Home", "About", and "Contact" links. To the right of the navigation is a search bar containing the placeholder "What are you looking for?" followed by icons for user profile, heart, and shopping cart. Below the navigation is a horizontal menu with three categories: "SPECIAL COLLECTION", "NEW ARRIVALS", and "BEST SELLERS". The main visual is a large photograph of three women standing outdoors in a landscape. The woman in the center is wearing an orange blazer over a white top. The text "LATOYA" is prominently displayed across the middle of the photo, with "FOR WOMEN & KIDS WEAR" underneath it. Below this section is a "SHOP BY CATEGORY" heading with five categories: "CASUAL", "SIOREE", "JEANS", "SHOES", and "BAGS", each accompanied by a small product image. At the bottom left, there is a sidebar with links to "Shipping & return", "Privacy notice", "Conditions of use", "About us", and "Contact us". The bottom right features a "FOLLOW US" section with social media icons for Facebook and Instagram.

LATOYA Home About Contact What are you looking for?

SPECIAL COLLECTION NEW ARRIVALS BEST SELLERS

**LATOYA**  
FOR WOMEN & KIDS WEAR

SHOP BY CATEGORY

CASUAL SIOREE JEANS SHOES BAGS

► Shipping & return  
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## SPECIAL COLLECTION

## NEW ARRIVALS

## BEST SELLERS



CASUAL



SIOOREE



JEANS



SHOES



BAGS

SORT BY | RECENTLY ADDED

FILTER BY | JACKETS



CROPPED TRENCH COAT

799 EGP



BLACK PUFFER JACKET

1999 EGP



BEIGE PUFFER JACKET

1999 EGP



DENIM JACKET

1499 EGP



BLACK COAT

2999 EGP



BLACK TRENCH COAT

3499 EGP



NAVY BOMBER JACKET

999 EGP



WINDBREAKER JACKET

999 EGP



PINK BOMBER JACKET

999 EGP



BLACK LEATHER JACKET

2999 EGP

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## WINDBREAKER JACKET

999 EGP

ADD TO CART

FAVOURITE

### Available size

S      M      L      XL

### size chart

Size	Bust		Length	
	inch	cm	inch	cm
S	36.22	92	26.38	67
M	37.80	96	26.77	68
L	39.37	100	27.17	69
XL	40.94	104	27.56	70

### Product details

- Material: 100% Polyester
- Fabric thin, soft and quick dry, has no stretch
- Hooded anorak jacket featuring Zip Up Design, color block style, reginal sleeve and side pockets
- Care Instructions :Hand Wash ,Machine Washable, Do not Bleach

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## Cart items

**WINDBREAKER JACKET**

Quantity

+ 1 -

999 EGP

**BLACK PUFFER JACKET**

Quantity

+ 1 -

1999 EGP

**Shipping**

99 EGP

**Total**

3097 EGP

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## CHECKOUT

Name

Email

Address

Phone number

 +20 |[BACK](#)[CHECKOUT](#)

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# SDLC MODEL

The suitable SDLC model for your system and describe why you use this model?

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- Clothes store system follow Waterfall model:

The Waterfall model is the best fit to develop this clothing store management system because the project has clear and definitive requirements with a confirmed workflow.

**First**, all of the requirements for the system have already been documented in the requirements document, stakeholder interviews, and surveys. For example, the manager, cashiers, and customers have all spelled out what they want, including an easy-to-use POS system, real-time inventory tracking, integration across multiple branches, and secure payments. Because these requirements are not expected to change as the project is developed, the Waterfall model, which requires each step (planning or design) to be drafted before moving onto the next step, is a good fit for the project.

**Second**, the project is constrained by a timeline of strict budget and time (250,000 budget and 3-6 month timeline). Waterfall's sequential stages help to minimize spend and maintain timelines, as there are clearly defined deliverables at the end of each phase (requirements, design, development, testing and deployment) which mitigates the risk of unforeseen schedule deviations and spend.

**In the end**, since the feedback from end-users was collected up-front (through interviews and surveys), the team will not need to deal with continuous iteration throughout development (unlike Agile methods, which constantly request input/input from the customer). Waterfall allows the team to deliver the system exactly as planned since the team will be free of interruptions to deliver the planned changes.