Traditional Artisan Craft Management System

SRS (SE-406)

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Elicitation of TACMS

The main task of the elicitation phase is to combine the elements of problem solving, elaboration, negotiation and specification. The collaborative working approach of the stakeholders is required to elicit the requirements. The following tasks have been finished for eliciting requirements of TACMS:

- Collaborative Requirements Gathering
- Quality Function Deployment
- Usage Scenarios

Collaborative Requirements Gathering

We have met with the stakeholders in the inception phase such as the staff and faculties. These meetings created an indecisive state for us to elicit the requirements. To solve this problem, we have met with the stakeholders (who are playing a vital role in the whole process) a few times to elicit the requirements.

Quality Function Deployment(QFD)

QFD is a structured methodology used to translate customer requirements into special technical features & attributes that can guide the design and development process. QFD was first developed in Japan in the late 1960s. According to the original developer of QFD, “ It is a method to transform qualitative user demands into quantitative parameters, to deploy the functions forming quality and to deploy methods for achieving the design quality into subsystems and component parts & ultimately to specific elements of the manufacturing process.”

In this respect, the author has to combine his work in quality assurance & quality control points with function deployment used in value engineering.

First of all, we contacted a local founder who may create a sector for delivering products to common people. By talking to her, we identified our several stakeholders and talked with them. The stakeholders that we identified were the director, local founder, designer, employees & supplier. Here, the director, the local founder & the designer are the **direct** stakeholders. And the employees & suppliers are the **indirect** stakeholders of that project. The requirements they identified are as follows:

Normal Requirements:

These are the general requirements that are stated by the customer during meetings as his goals & objectives of the software. If the normal requirements are completed then it will lead to customer satisfaction.

➢ Login and sign-up system for all of the stakeholders. (Three types of login systems (customer, owners, employees)).

➢ Scope to select product types.

➢ Options to select pre-designed products or order as they desired. (user)

Customized products

- Flexibility to modify the selected products before confirming the order. (user)
- Provide clear choices to customers and explain associated costs.

Pre-designed products

- Ability to adjust the pricing, quality, and quantity of pre-designed products and fabric options.
- Flexibility to change the selected products before confirming the order. (user)

➢ Advance payment system.
➢ Monitoring the product that it is damaged (or not) before delivery.
➢ An account management system to efficiently handle customer interactions and enable data-driven decision-making.
➢ Advertisement of the products.
➢A system to manage human resources-related tasks such as recruitment and employee records.

Expected Requirements:

Expected requirements are so obvious that the customer need not explicitly state them. If these requirements are not met then it may create significant dissatisfaction. The expected requirements of our system are given below:

➢ Password change or recovery option using email or phone number.
➢ Securing user's information.
➢ Platform or device-independent system.
➢ Scope to select the skill sets for employees.
➢ Options to choose the fabric yarns for designed products.
➢ Upon receipt of the advance payment, the order stands confirmed, and no additional alterations will be considered.
➢ Work update system for monitoring the progress of the work.

Exciting Requirements:

These requirements are beyond the client's expectations. Creating exciting requirements is crucial to inspire stakeholders alike. Exciting requirements are:

➢ The user may custom design the product according to their own preference and taste including the placement of motifs.

➢ Provide the whole story to illustrate how the software will solve the specific problems of users.

➢ Real time tracking of the products can be detected.

➢ Some promotional and marketing strategies like seasonal sales and discounts will be decided by the managers and account managers.

➢ Provide a special module that contains the final outcome of the desired products so that stakeholders can visualize the 3D design of the actual product at any time.

STORY: Traditional Artisan Craft Management System

There exists an outlet 'Aalam Nari Uddokta songstha' under 'Joyita' foundation located in Dhanmondi 27, Dhaka which sells these traditional products.

There is also a traditional cottage industry that connected with few small size companies named- Tontuj, Bain-Textile situated in Rangamati, they make traditional products including -

1. clothes(Pinon-khadi), lungi, t-shirts,one and two pieces dress
2. Fabrics
3. Show pieces
4. Ornaments

List of employees managed by the outlet:

1.Head of the outlet

2.Manager

3.Account manager
4.Cashiers
5. Co-ordinator
6.Tailors

List of employees in Rangamati:
1.Head of the industry
2.Weavers
3.Designer
4.Collector
5.Account manager
6.Tailors

A customer can buy their products in two different ways. One of them is buying a product directly from the outlet, and another one is custom designing their products according to their preference.

The outlet head will communicate with the manager to select which type of products need to be produced. Then the manager will discuss with the coordinator to ensure the type and design of the products. All the accounting work will be managed by an Account Manager, with two Cashiers providing support. Cashier-1 will manage all the production and transportation-related costs of the outlet. Cashier-2 will manage the financial transactions within the showroom.

The coordinator will visit the industry in Rangamati and discuss with the industry manager about the required products. If the required products are already available in the industry, the coordinator will confirm their order. Otherwise, the coordinator will let the manager know that his

required product is not readily available in the industry and the products need to be made from scratch according to outlet design or customer design. Then the Industry manager will set a meeting with the coordinator and industry designer and finalize their design.

The designer will send the design to the collector. Then the collector will assign the design to the weavers, one particular design will be assigned to one particular weaver and the weaver will implement the design accordingly. The collector will collect the product from the weaver after the implementation and store it in the industry storage.
There is an accounting system in the industry that is managed by an account manager. The cashier will engage in discussions with the industry account manager to establish payment arrangements for both designers and collectors, as well as handle the disbursement of advances and outstanding payments to weavers.

The storage will consist of two types of products, custom-designed products and pre-designed products. The collector will divide the product into designed and predesigned categories. Again, there are two types of predesigned products that include already made products and only fabrics.

The custom-designed products will be directly sent for transportation, if the coordinator selects any products from pre-designed items, an order picker will pick them up to send them for transportation. After transportation, all the products will be stored in the outlet storage.

In order to dispatch the products from the outlet storage a collector will come and separate the fabric and already-made products. Then the already-made products will be sent for packaging and tagging. The

outlet designer will prepare a design for the fabrics and send it to the tailors. Tailors will implement the design accordingly and send the final product for packaging and tagging. All neatly packaged and tagged products will be dispatched to the showroom.

List of features:

1.Registration System

This system authenticate the valid user,

There are three types of authentication for registration:

- Employees's Authentication
- Customer's Authentication
- Owner's Authentication

Employee's Authentication:

If Owner selects employees.The employees get an email through which they can sign-in into the website.

- Sign-in or Sign-up:

Employees can register into the system by entering their name, email, phone-number, address, job-position and password. They can also store their sign-in details.

- Password Recovery:
  If employees forget their password,they can recover it using their email address.

Customer's Authentication:

Anyone can sign-in into the website.

- Sign-in or sign-up:
  One can register into the system by entering his/her name, email, phone-number, present address and password. They can also store their sign-in details.

- Password Recovery:
  If they forget their password,they can recover it using their email address or phone number.

Owner's authentication:

Owners need to sign-in into the system by entering his contact number,email address and password.They can also recover or modify their details using their provided email.

- Account creation and deletion:

The owner will send an email to the employees to create their own accounts and even can delete any employee account at any time.

2.Employees Management system:

- Head of the outlet:

The outlet head will communicate with the manager to select which type of products need to be produced.

- Manager:

The outlet manager discusses with the coordinator, to ensure the type and design of the products.The outlet manager handles the collector, account manager, designer, tailors, cashiers.

The Industry manager sets a meeting with the coordinator and industry designer.

The accounting manager handles all the work related to finance and accounting.

- Co-ordinator:

  The coordinator confirms the order, selects any products from pre-designed items and if the required product is not readily available in the industry, the coordinator lets the industry manager know about the required product.

- Designer:

  The industry designer finalizes their design, and sends the design to the collector.

  The outlet designer prepares a design for the fabrics and sends it to the tailors.

- Collector :

  The industry collector collects the design from the designer, assigns the designs to the weavers and collects the products from the weavers.

  The outlet collector separates the fabric and already-made products.

- Weavers and Tailors:

  Weavers and Tailors implement the design and prepare the products.

- Cashiers:

  Cashiers manage all the production and transportation related costs and also the financial transactions within the showroom.

In this section, attendance and working hours will be monitored. If an employee works above their scheduled hours, this will be recorded in our system, and they will receive a bonus. Our system will also keep track of leaves taken by the employees. An employee is entitled to a certain number of days off. The employee's salary will be deducted if they take more time off than allowed. The employee will receive a bonus if he takes fewer leaves.

3.Order Management System :

Order template:

- *Ready-made products*
- *Customized products*
- *Payment:*

  1. If customers select ready-made products,they can pay with cash on delivery or a digital method(Bkash,Nagad,Rocket).

  2.Otherwise,they have to pay a fixed amount for customized products using the advance payment system.

  3.Upon successful completion of the payment process, a confirmation email will be sent to the customer to verify that the payment has been successfully received.

4.Storage management system:

Storage management system efficiently integrates with order fulfillment for streamlined operations.The storage will consist of two types of products, custom-designed products and pre-designed products. The collector will divide the product into designed and predesigned categories. Again, there are two types of predesigned products that include already made products and only fabrics.

Sometimes, when an employee is not paying enough attention, numerous products in the store are taken by customers. Also, employees can lose and stolen products. Therefore, providing security services is crucial for managing the store efficiently. CCTV cameras are used to monitor the store, and only the owner has access to the video footage, preventing any recordings deletion by head of outlet. Our system will keep all of the CCTV recordings for a month before notifying the account owner if he wants to delete the recordings. If the owner is free to delete or keep the recordings for however long he wishes. Additionally, a fire alarm option will be available. The owner will receive a notification and an alarm if the security camera detects any smoking.

5. Transport Management system:

The custom-designed products will be directly sent for transportation, if the coordinator selects any products from pre-designed items, an order picker will pick them up to send them for transportation.

Real-time tracking in a transportation system enables precise monitoring of–

- *Vehicles*

- *Shipments,*
- *provide instant visibility into their location and status.*

6.Account management system:

Account management is a major part of any management system. The system will store information about all the transactions of the store. The parts of accounting of the store are-

● Inventory records

We need to keep track of the wholesale purchase record from the dealers. The product information and price will be stored here.

● Purchase records

After every purchase, all the information of the purchase will be stored into the database. The information is

1. *product list*
2. *quantity*
3. *product cost*

The income of the shop comes from this part. This information is also sent to the customers via SMS. Relevant profit from each sales record will be calculated automatically.

● Due records

In shops, customers often buy products without paying money. They pay this due amount at the end of the week or month. So we need to

keep a record of the due amount of every customer. Aside from the daily notification of the due amount, the customer will also receive a monthly or weekly reminder of the due amount via SMS.

- **Salary records**

The owner needs to pay the salary of his employees. The information we need to store here is:

1. *The amount of each employee's monthly wage*
2. *The records of overtime for extra payment*
3. *Any deduction of salary*
4. *Bonus on special occasions*

These are recorded in the database. The owner will manually decide the salary, update the salary, fix the amount of bonus, and fix the extra payment amount for overtime. At the end of the month, the software will tell the owner how much he needs to pay each of his employees.

- **Sell history**

The aim of the system is to maximize the profit of the shop. So it will tell us about the cost and profit of the shop on a monthly basis. The owner can input any date range to see the net cost and profit/loss at that time. He will also get to know which product is sold the most and which the least.

7.Design Management system:

Before the order of customized products,there will be a 3D design model.The customers can give designs of their own choice using a design model named : ‘aalam’.The customer can also select color,fabric for this.

The designs will be generated by the system and sent a notification to the designers and workers.

8.Product Management System:

When the employees,designer and owners get notifications ,they understand there is another product request. The manager informs the co-ordinator about it. Then, co-ordinator forwards the request to the collector and also confirms about the product from the customer by making a call.

Collectors manage and inform the manager when the product is ready.If they are not able to make the products that will also be informed to the manager.

The information about the product will be stored in the system.These are:

- *Order date*
- *Order time*
- *Price*
- *Quantity*
- *Choice*
- *Demand of the weavers*
- *Discount(available before occasions)*

9. Database Management System:

The database will only be accessible to the owner. The database table called “Security” will contain the security recording, which will be stored there along with its size and date. A table in the database called "Employee Information" will be used to record the following information about employees: employee id, full name, contact number, nid number, email address, photo, permanent address, current address. Customers' full names, phone numbers, email addresses, and delivery addresses will be kept in a database table .That will be used to hold Coordinator information, such as the Coordinator’s name, phone number, email address, company name and product name. Any table's information can be easily removed or added by the owner. Every produced good and incoming stock will be added to the database. Every

product's expiration date will also be kept there so the owner may handle the expired goods. Every shipment and transaction will be stored distinctly in the table. Order details are recorded and include the product name, quantity, payment method, customer's name, customer phone number, and the total bill.

Requirements Modeling

In software development projects, requirements and solutions are continuously altered through teamwork and collaborative efforts through a technique called requirements modeling. Relatively accurate representation of requirements is achieved by requirements modeling, which combines text and diagrammatic representations.

Scenario Based Modeling

One of the sub-stages of requirements modeling is scenario-based modeling. Since it specifies the main use cases for the proposed software system or application, it is often the first stage of requirements modeling. Later stages of requirements modeling will relate to these use cases. The software team will be better equipped to accurately identify

needs and create useful analysis and design models if we comprehend how end users (and other players) desire to engage with a system.

Use Case Diagram

A use case diagram is a tool for summarizing information about a system and the users within it. It is typically displayed as a graphic representation of how various system components interact with one another. Use case diagrams will detail the system's events and the order in which they occur, but they do not go into detail on how those events are carried out.
An approach for identifying, outlining, and organizing system requirements is called a Use Case. The word "system" here refers to a thing that is being created or run, like a website for mail-order product sales and services. The application's 26 system or subsystem is modeled using the diagram. A use case diagram encapsulates a certain specification. UML (Unified Modeling Language), a standard language for the modeling of real-world objects and systems, uses use case diagrams.

Use case diagram is comprised of different symbols and notations which are included as follows:

Actors:

Actors are the users who communicate with a system. They may be a person, group, or external system that communicates with your system or application. They must be external data-producing or data-consuming

objects. In the use case diagram, stick figures denote the actors employing the use cases. Actors are also divided into two parts:

● Primary Actor

Primary actors collaborate to accomplish necessary system functions and produce the system's desired requirements. They often and directly collaborate with the software.

● Secondary Actor

A secondary actor is a person, business procedure, or application that gives a use case a certain outcome or information in order to accomplish the use case's ultimate objective. Secondary actors support the whole system for fluent execution of primary actors. And they accomplish this task by producing or consuming information.

Associations

Associations are depicted through a line between actors and use cases. It’s quite important because when the diagram becomes complex, associations help to understand the association between actors and use cases.

System

System means a certain pattern of actors' behaviors and interactions. The system is also titled Scenario. In the diagram, a box is used to represent the system scope to use cases. The use case outside the box is considered out of the system’s scope.

Module

All of the use case components are gathered within a single UML shape. This module is also signified as a file or folder.

Use Case Scenarios

Level:0

Name: **Traditional Artisan Craft Management System**

Primary Actor: Head of Outlet, Cashier, Manager, Coordinator, Designer, Head of Industry, Customer, System

Secondary Actor: Order Picker, CCTV, Mail Service, Collector, Tailor, Weavers, Phone, SMS.

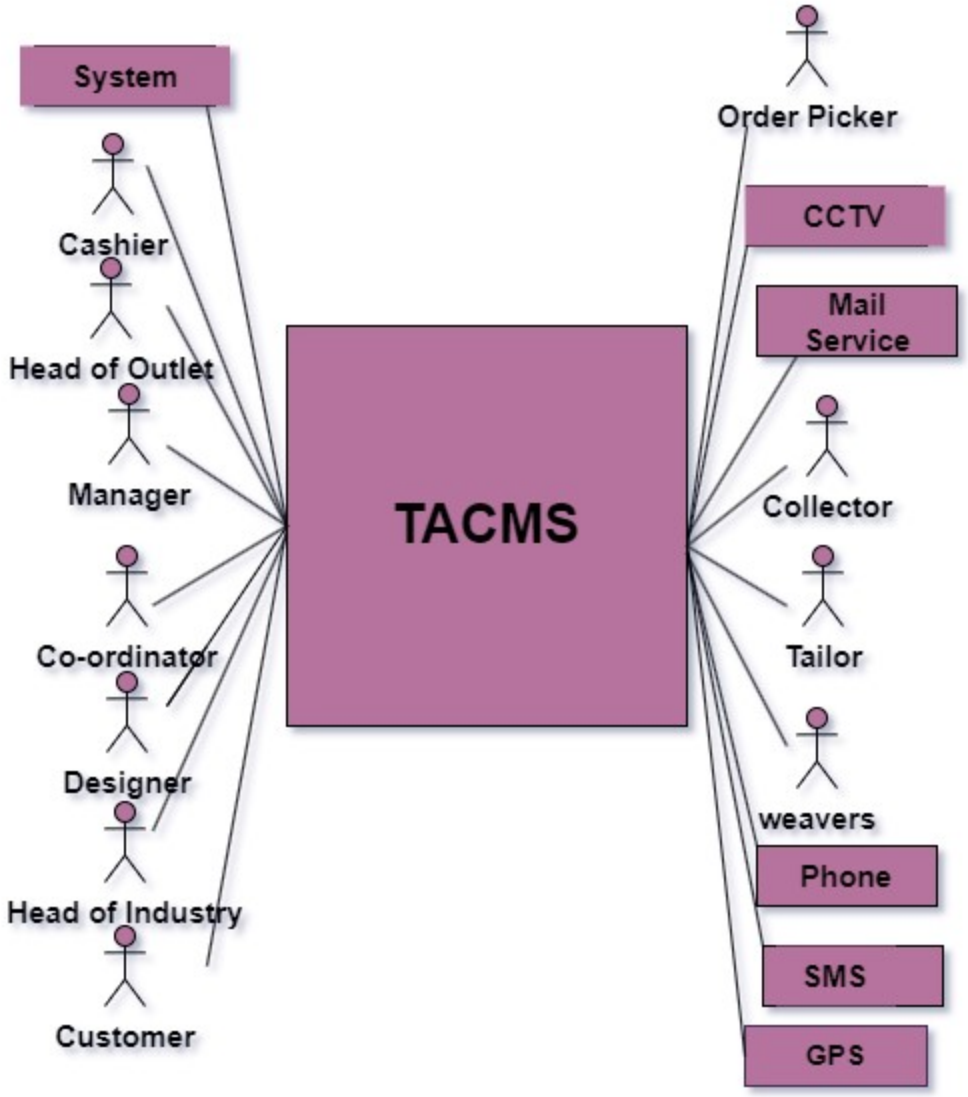


Fig-1: Traditional Artisan Craft Management System

Action Reply for level-0

- Action: Users register based on their roles - Employees, Customers, Owners.

Response: Authenticated access to the system with email-based sign-in and password recovery.

- Action: Coordination among Outlet Head, Managers, Coordinators, Designers, Collectors, Weavers, Tailors, and Cashiers.
  Response: Streamlined communication and management of tasks within the outlet and industry.
- Action: Customers place orders for ready-made or customized products with varied payment methods.
  Response: Confirmation emails, real-time tracking, and order details stored in the system.
- Action: Integration with order fulfillment, categorization of custom-designed and pre-designed products.
  Response: Security measures with CCTV, owner-controlled video footage, and fire alarm options.
-
- Action: Direct shipment for custom-designed products, order pick-up for pre-designed items.
  Response: Real-time tracking for vehicles, shipments, and logistics.
- Action: Record-keeping for inventory, purchases, due amounts, and employee salaries.
  Response: Automated profit calculations, due reminders to customers, and financial transaction management.
- Action: 3D design model creation with customer input using 'aalam'.
  Response: System-generated designs, notifications to designers and workers.

- Action: Notification-driven understanding of new product requests, coordination among managers, collectors, and designers.
  Response: Information storage about products, including order date, time, price, quantity, choices, and weaver demands.

- Action: Database accessible only to the owner, structured tables for security, employee, customer, coordinator information, inventory, orders, etc.
  Response: Centralized control over data, flexibility in table management.

Level:1

Name: **Details TACMS**

***Primary Actor*:** Head of Outlet, Cashier, Manager, Coordinator, Designer, Head of Industry, Customer, System

Secondary Actor: Order Picker,CCTV, Mail Service, Collector, Tailor

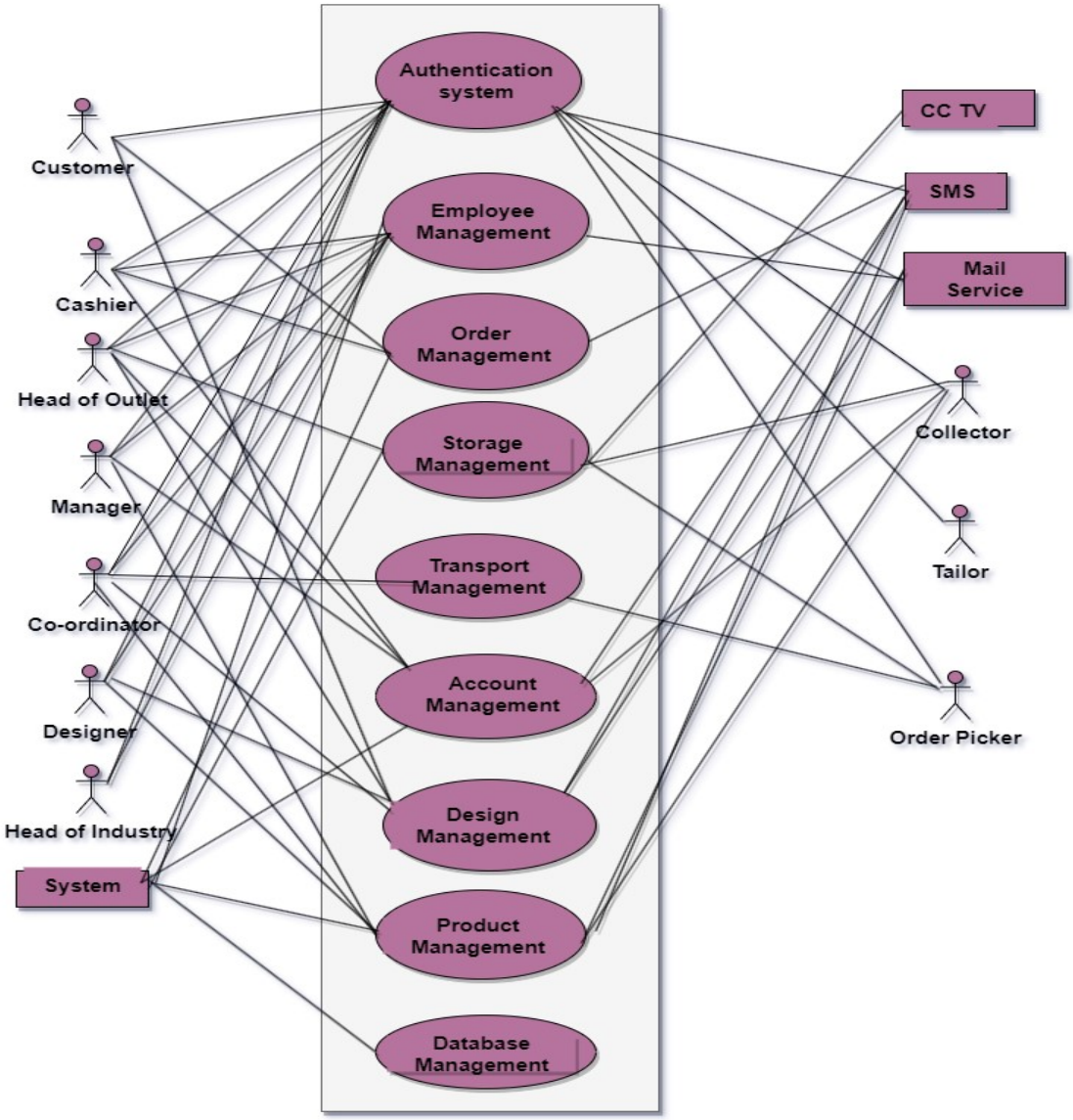


Fig-2: Details TACMS

Level:1.1

Name: **Registration System**

Primary Actor: Head of Outlet, Cashier, Manager, Coordinator, Designer, Head of Industry, Customer

Secondary Actor: Collector, Tailor, Order Picker, Weavers

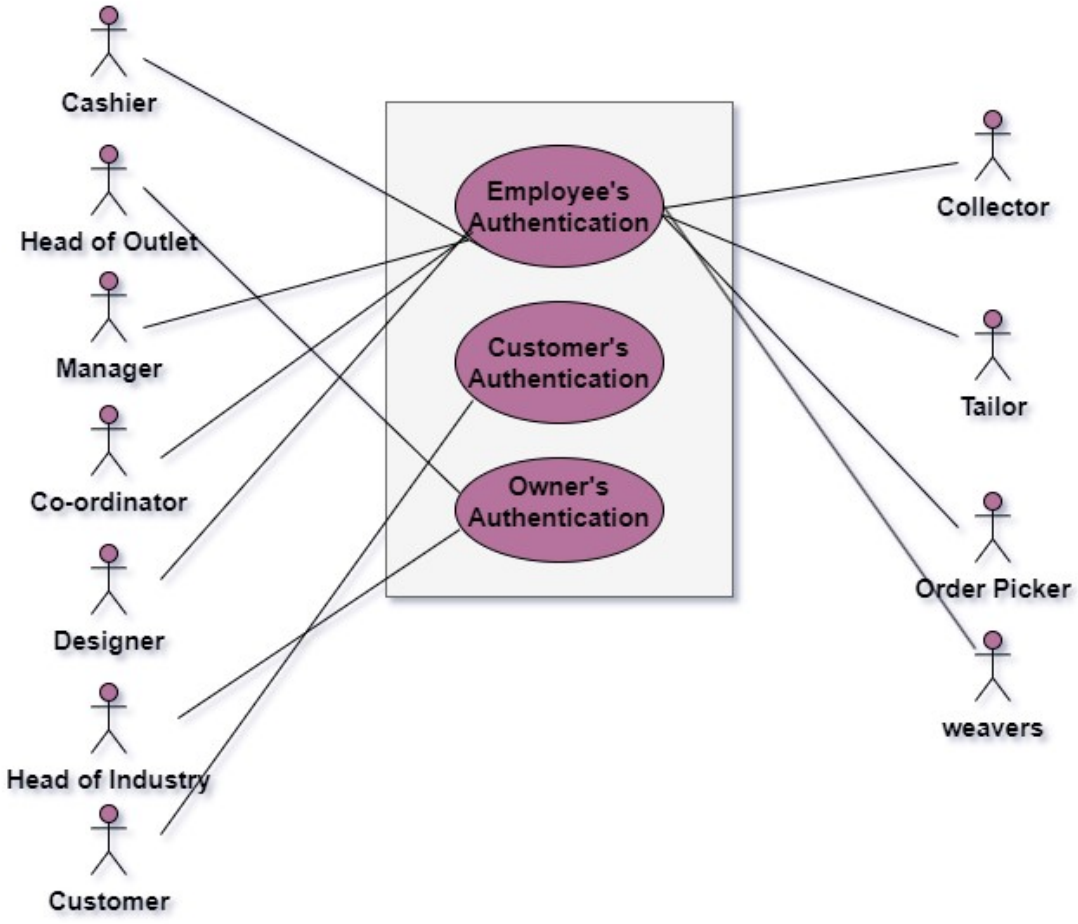


Fig-3: Registration System

Action Reply for level 1.1(Registration System)

- Action: Owner selects employees for authentication.
  Response: Employees receive an email with sign-in details for website access.

- Action: Employees register by providing name, email, phone number, address, job position, and password.
  Response: System stores employee details for authentication.

- Action: Employees forget their password.
  Response: Password recovery is initiated through the provided email address.

- Action: Anyone can sign-in.
  Response: Individuals register with the system using name, email, phone number, present address, and password.

- Action: Customers register with the system.
  Response: System stores customer details for authentication.

- Action: Customers forget their password.
  Response: Password recovery is initiated through the provided email address or phone number.

- Action: Owners sign-in with contact number, email address, and password.

Response: Owners can recover or modify their details through the provided email.

- Action: Owner sends emails for employee account creation or deletion.
  Response: Employees receive emails to create accounts or are notified of account deletion. The owner has control over employee accounts.

- Action: Employees receive an email for account creation.
  Response: Employees use the provided details to create their accounts.

- Action: Owner decides to delete an employee account.
  Response: The specified employee account is deleted from the system.

- Action: System sends notifications for various actions (registration, password recovery, account creation, deletion).
  Response: Users receive timely notifications about their actions and account status.

- Action: Users sign in with their credentials.
  Response: Authenticated users gain access to the system based on their roles (employee, customer, owner).

Level:1.1.1

Name: **Employee's Authentication System**

Primary Actor: Head of Outlet, Cashier, Manager, Coordinator, Designer, Head of Industry

Secondary Actor: Collector, Tailor, Order Picker, Weavers

He

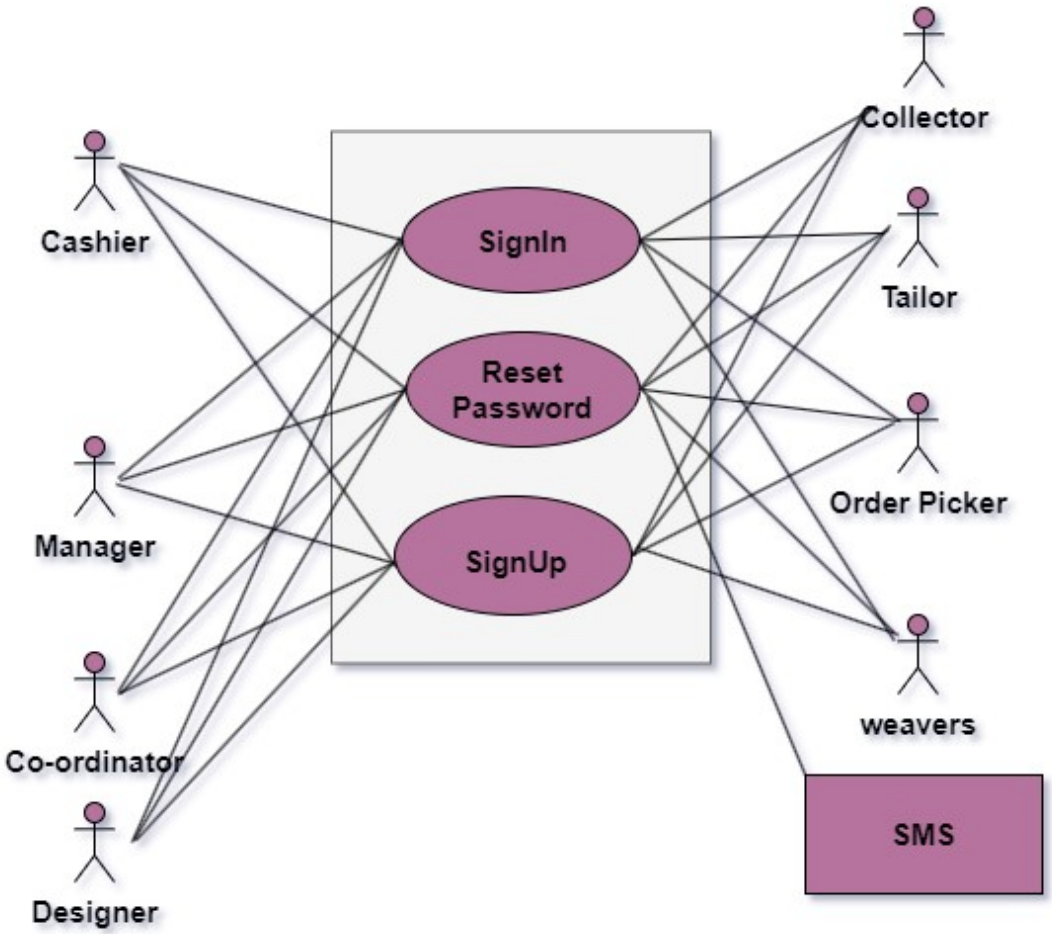


Fig-4: Employee's Registration System

Level:1.1.2

Name: **Customer's Authentication System**
Primary Actor: Customer
Secondary Actor: SMS

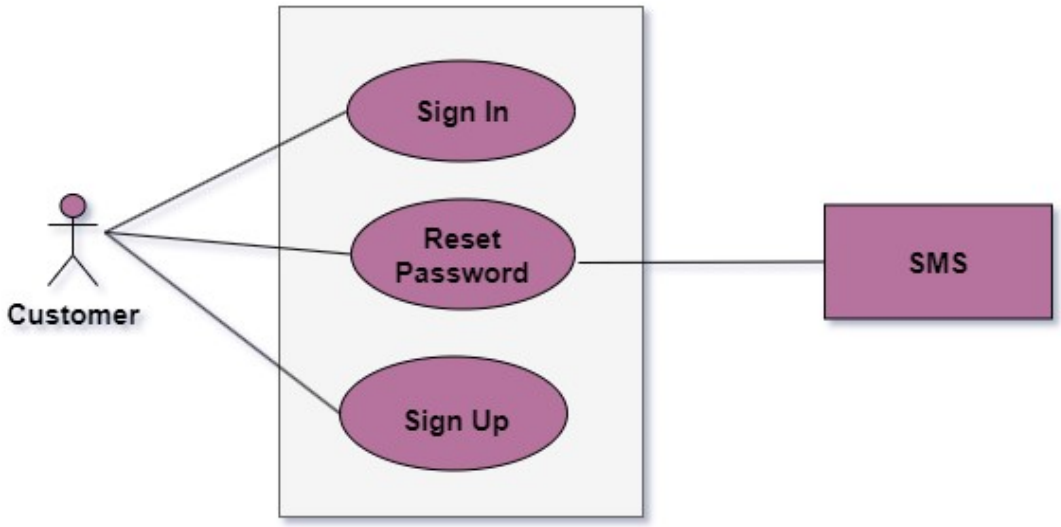


Fig-5: Customer's Registration System

Level:1.1.3

Name: **Owner's Authentication**
Primary Actor: Head of Outlet
Secondary Actor: sms

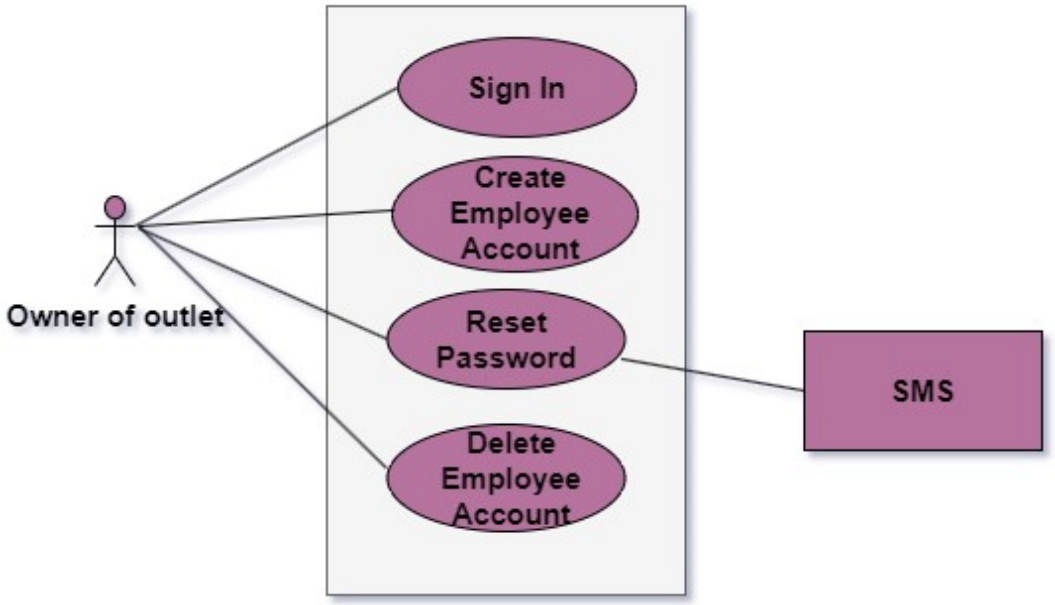


Fig-6: Owner's Registration System

Level:1.2

Name: **Employee Management System**

Primary Actor: Head of outlet,system

Secondary Actor: email

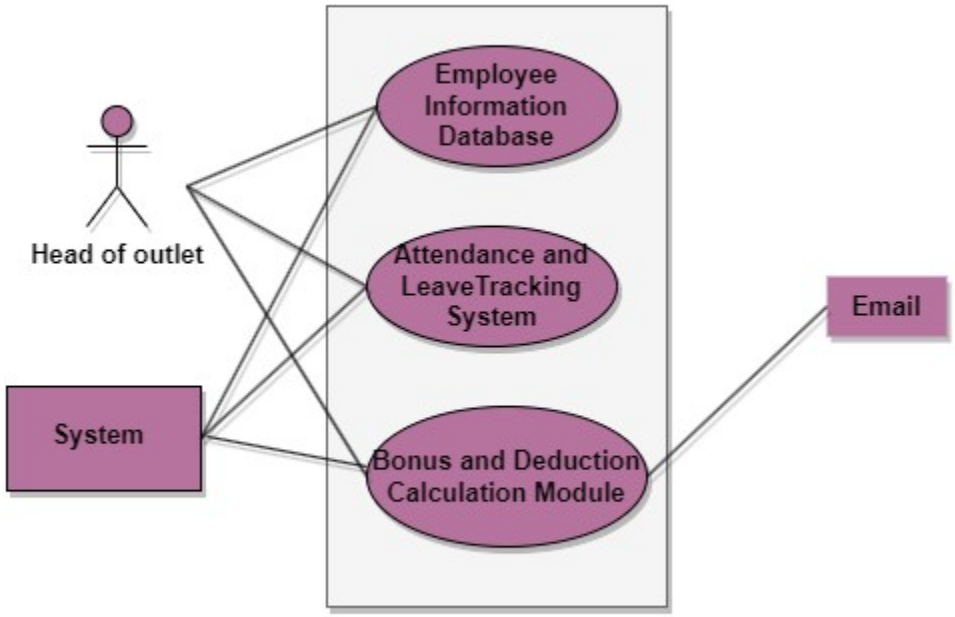


Fig-7: Employee Management System

Action Reply for level 1.2:

- Action: Employees clock in and out to record their working hours.
  Response: The system logs the working hours for each employee.

- Action: System compares the actual working hours with the scheduled hours.
  Response: If an employee works above their scheduled hours, the system records the extra hours for bonus calculation.

- Action: Employee works beyond scheduled hours.
  Response: The system calculates the bonus based on the extra hours worked and adds it to the employee's salary.

- Action: Employee submits a leave request.
  Response: System records the leave request and checks the leave balance.

- Action: System checks the available leave balance for the employee.
  Response: If there are sufficient leave days, the system approves the leave request; otherwise, it's denied.

- Action: Employee takes more leaves than allowed.

Response: The system deducts the corresponding salary amount for excess leaves from the employee's salary.:

- Action: Employee takes fewer leaves than allowed.
  Response: The system adds a bonus to the employee's salary for maintaining a good attendance record.

- Action: Leave request is approved.
  Response: The system updates the leave balance for the employee.

- Action: Employee receives a bonus.
  Response: The system sends a notification to the employee regarding the bonus added to their salary.

- Action: Employee takes excessive leaves.
  Response: The system sends a notification to the employee regarding the salary deduction for the excess leaves.

- Action: Periodic reporting intervals (weekly, monthly, etc.).
  Response: The system generates reports on employee attendance, bonus, leaves taken, and deductions.

Level:1.3

Name: **Order Management System**

Primary Actor: Customer, Cashier

Secondary Actor: Email ,sms

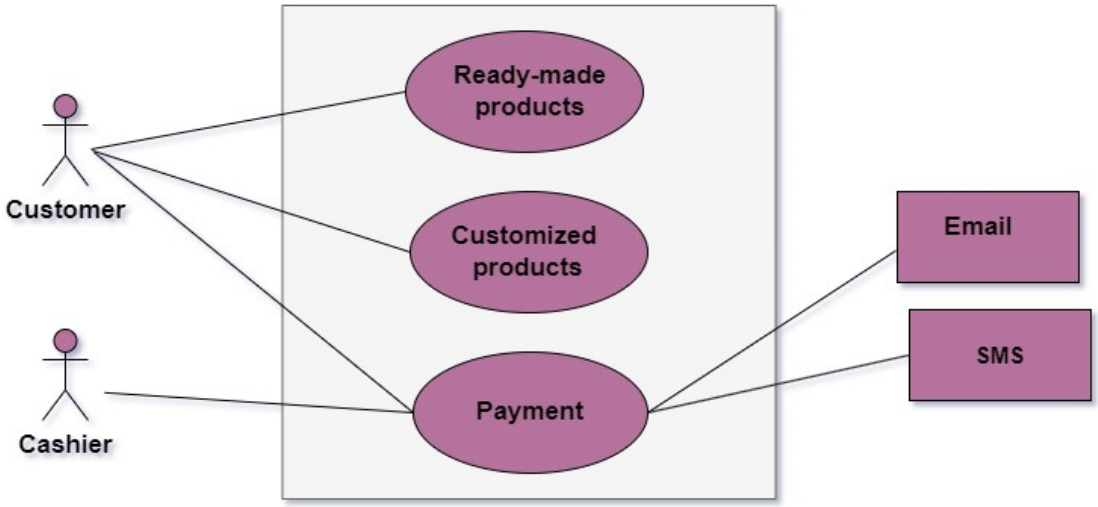


Fig-8: Order Management System

Action Reply for level 1.3

- Action: Customer selects ready-made products.
  Response: System displays payment options - Cash on Delivery or Digital Payment (Bkash, Nagad, Rocket).

- Action: Customer chooses a payment method (Cash on Delivery or Digital Payment).
  Response: If Cash on Delivery, proceed to order confirmation. If Digital Payment, move to payment processing.

- Action: Customer selects customized products.
  Response: System informs the customer about the advance payment requirement for customized products.

- Action: Customer agrees to pay the fixed amount for customized products.
  Response: System prompts the customer to make an advance payment.

- Action: Customer initiates digital payment (Bkash, Nagad, Rocket).
  Response: System processes the payment. Upon successful payment, generate a payment confirmation.

- Action: Payment is successful.
  Response: System sends a confirmation email to the customer with details of the order and payment confirmation.

- Action: Payment is successful.
  Response: System displays an order confirmation page on the website/application.

- Action: Customer receives the confirmation email.
  Response: The email contains details of the order, payment confirmation, and a link to verify the order.

- Action: Customer clicks on the verification link.
  Response: System verifies the order and confirms the successful payment.

- Action: Order is verified.
  Response: System marks the order as complete, and the products are prepared for shipping/delivery.

Level:1.3.1

Name: **Payment Management System**

Primary Actor: Customer, System

Secondary Actor: Cashier, SMS, Email

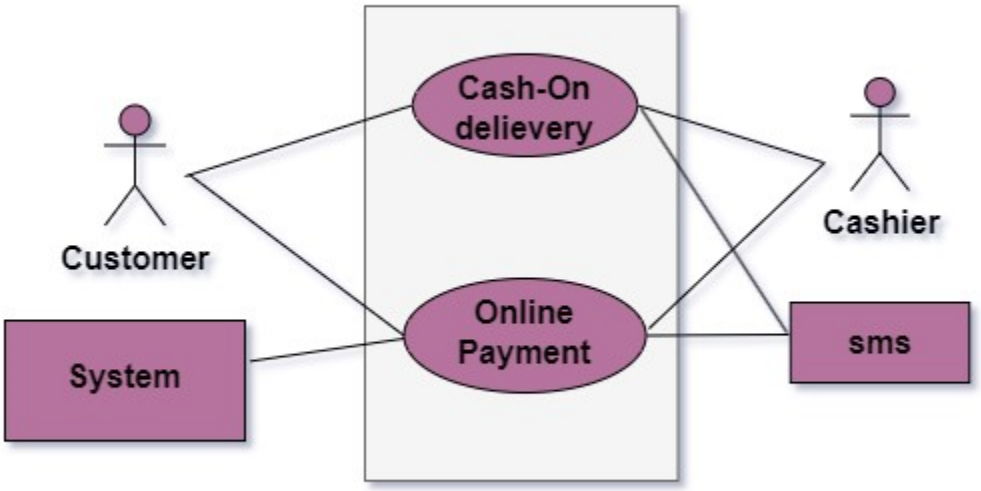


fig-9: Payment Management System

Level:1.4

Name: **Transport Management System**
Primary Actor: Coordinator
Secondary Actor: Order Picker,GPS

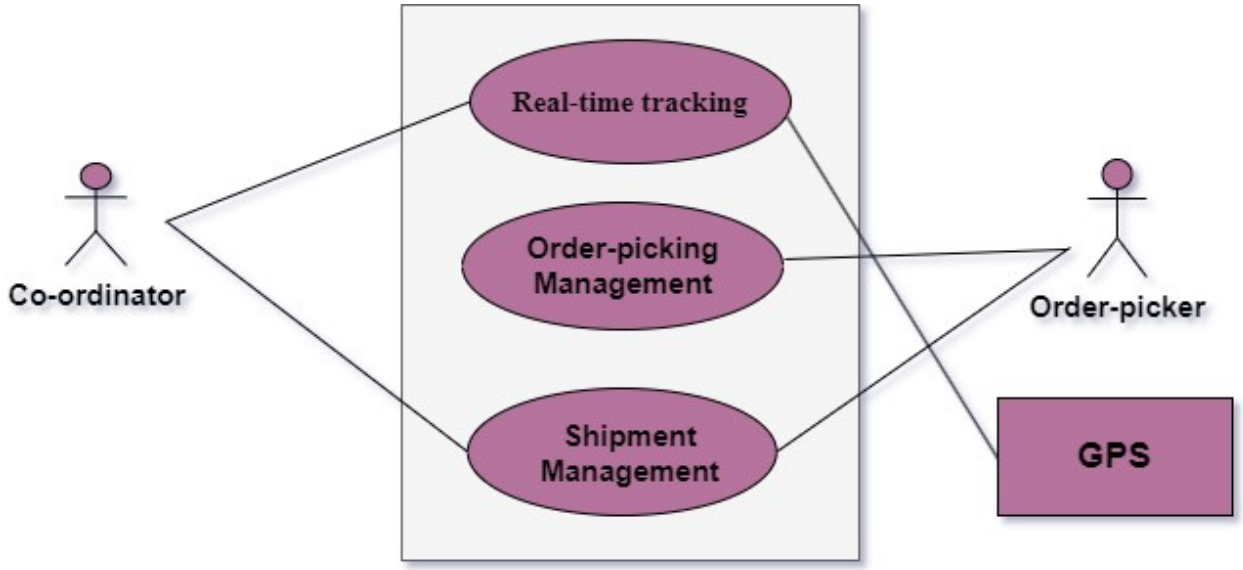


Fig-10: Transport Management System

Action Reply for level 1.4

- Action: Coordinator selects custom-designed products.
  Response: The system processes the order, and the products are directly sent for transportation.

- Action: Coordinator selects pre-designed items.
  Response: The system assigns the order to an order picker for picking up the pre-designed products for transportation.

- Action: Order picker retrieves pre-designed products.
  Response: The system updates the order status to "picked" and prepares the products for transportation.

- Action: Transportation process begins.
  Response: The system initiates real-time tracking for vehicles, shipments, and logistics.

- Action: Vehicles depart for transportation.
  Response: Real-time tracking provides continuous monitoring of vehicle locations and movements.

- Action: Shipments are loaded onto vehicles.
  Response: The system updates shipment statuses, providing real-time visibility into their location and status during transportation.

- Action: Logistics are in transit.
  Response: Real-time tracking allows instant visibility into the location and status of logistics components, ensuring efficient monitoring.

- Action: Changes in vehicle, shipment, or logistics status.
  Response: The system sends notifications to relevant stakeholders, such as coordinators or customers, providing instant updates on the transportation process.

- Action: Delays, detours, or other issues during transportation.
  Response: The system identifies exceptions and notifies stakeholders, allowing for timely interventions to address any challenges.

- Action: Products reach their destination.
  Response: The system updates the status to "delivered," providing a confirmation of successful transportation.

- Action: Completion of transportation.
  Response: The system logs historical data, enabling analysis and optimization of future transportation processes.

- Action: Customer queries shipment status.
  Response: The system provides real-time visibility into the location and status of the customer's shipment.

Level:1.5

Name: **Account Management System**
Primary Actor: Head of outlet,system,cashier
Secondary Actor: collector,sms

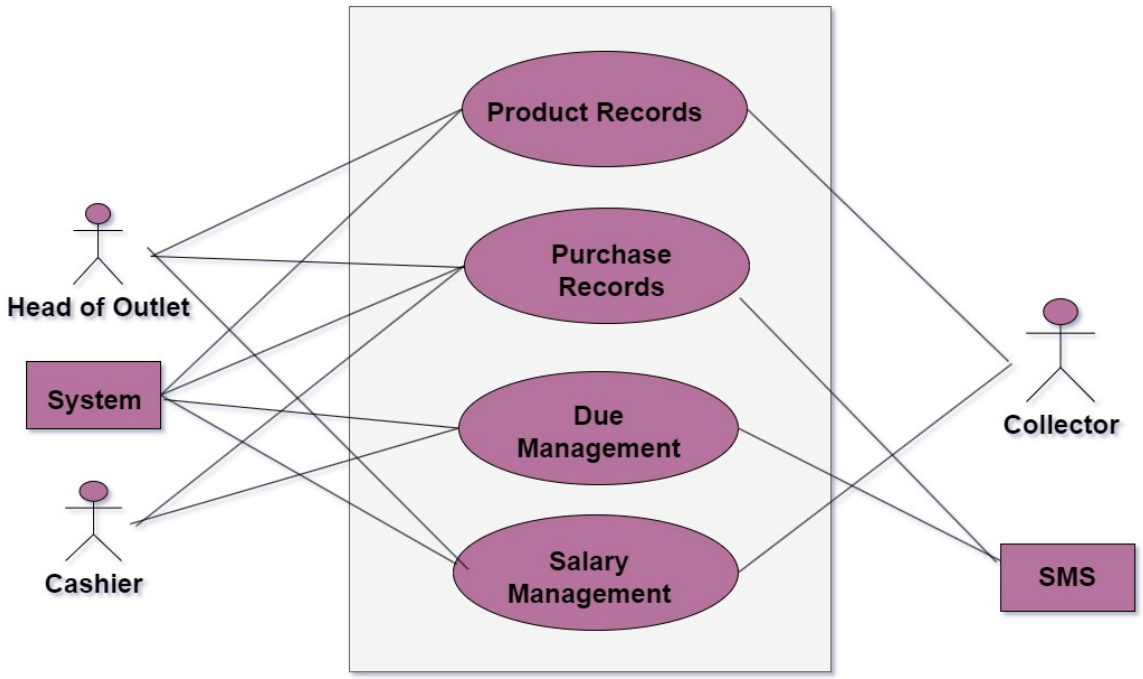


Fig-11: Account Management System

Action Reply for level 1.5

- Action: Wholesale purchase record from dealers.
  Response: The system stores product information, prices, and tracks inventory, forming a part of the overall cost of the shop.

- Action: After every purchase, store information about product list, quantity, and due value.
  Response: The system calculates relevant profit from each sales record, sends purchase information to customers via SMS, and updates income.

- Action: Keep records of customer due amounts.
  Response: The system sends daily notifications and weekly/monthly reminders of due amounts to customers via SMS.

- Action: Store information about each employee's monthly wage, overtime records, salary deductions, and bonuses.
  Response: The owner manually manages salaries, updates them, fixes bonus amounts and extra payment for overtime. The system calculates the total amount to be paid to each employee at the end of the month.

- Action: Track and record sales on a monthly basis.
  Response: The system provides insights into the cost and profit/loss on a monthly basis. The owner can input date ranges to analyze net cost and profit/loss at specific times.

The system also provides information on the best and least-selling products.

- Action: Analyze monthly sales history.
  Response: The system helps the owner make informed decisions to maximize the shop's profit by providing insights into sales patterns, product performance, and overall financial health.

- Action: Input date range for analysis.
  Response: The system calculates and displays the net cost, profit, or loss during the specified date range, helping the owner make strategic decisions.

- Action: Record all financial transactions.
  Response: The system maintains a comprehensive transaction history, allowing the owner to track financial activities, audit, and ensure transparency.

- Action: End of the month.
  Response: The system generates financial reports summarizing inventory costs, sales, profits, employee salaries, and other financial aspects for the owner's review and decision-making.

Level:1.6

Name: **Design Management System**

Primary Actor: Customer, Coordinator, Designer, Manager, System

***Secondary Actor*:** Email

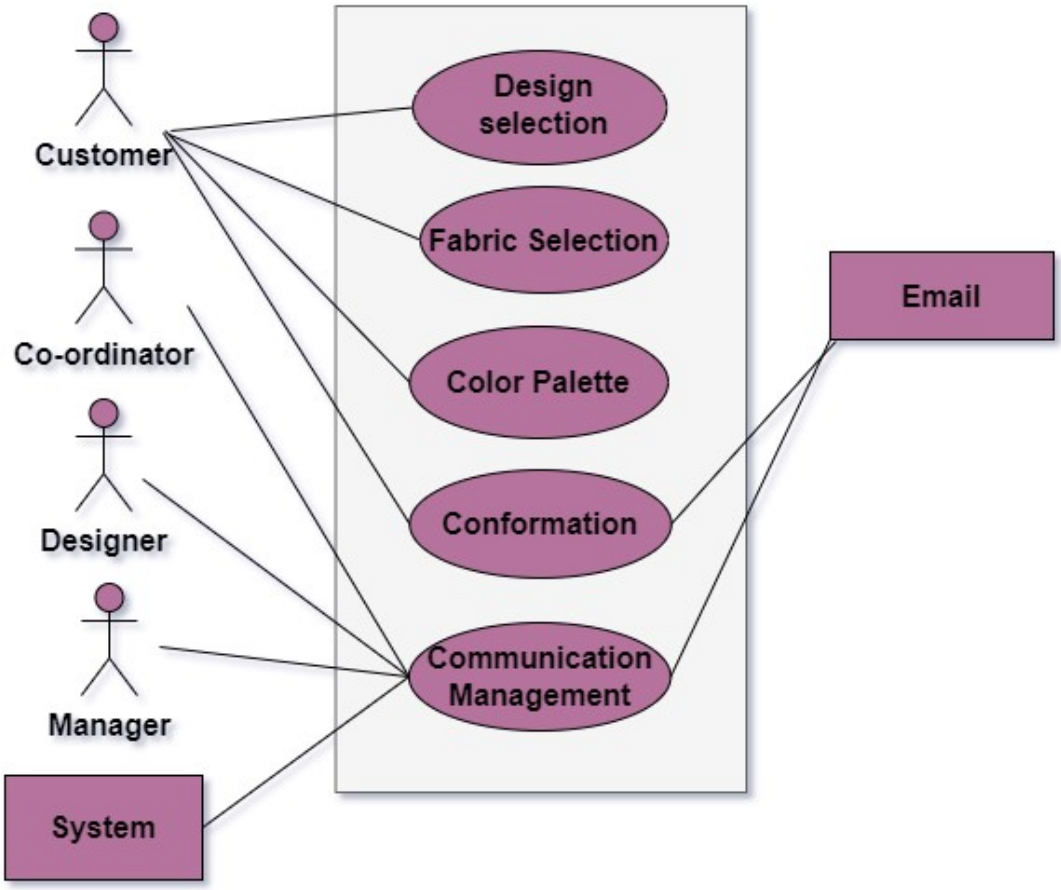


Fig-12: Design Management System

Action Reply for level 1.6

- Action: Customer provides design preferences using the 'alam' model.
  Response: The system captures the customer's design choices, including color and fabric preferences.

- Action: System processes customer design inputs.
  Response: The system generates a 3D design model based on the customer's preferences using the 'alam' model.

- Action: 3D design model is generated.
  Response: The system sends notifications to designated designers or workers, informing them about the new design order.

- Action: Designers review the generated 3D model.
  Response: Designers either approve the design or suggest modifications. The system communicates these responses to the customer.

- Action: Customer receives design approval/modification suggestions.
  Response: The customer confirms the design or requests further modifications.

- Action: Design is confirmed by the customer.
  Response: The system registers the final design approval and proceeds to the order placement process.

- Action: Customer places an order for the customized product.

Response: The order management system processes the order with the approved 3D design model, color, and fabric preferences.

- Action: Order is placed with approved design.
  Response: The system sends notifications to relevant workers or production teams, informing them about the new order and its specifications.

- Action: Workers receive notifications.
  Response: Production teams begin the manufacturing process based on the approved design, color, and fabric preferences.

- Action: System monitors the progress of the customized order.
  Response: The order management system provides real-time updates to customers on the production progress and estimated delivery date.

- Action: Product is ready for shipment.
  Response: The system ensures a quality check before dispatching the customized product.

- Action: Product passes quality check.
  Response: The system initiates the shipment process and provides the customer with tracking information.

Level:1.7

Name: **Product Management System**
Primary Actor: Manager, Designer, Coordinator, System
Secondary Actor: Collector, Email

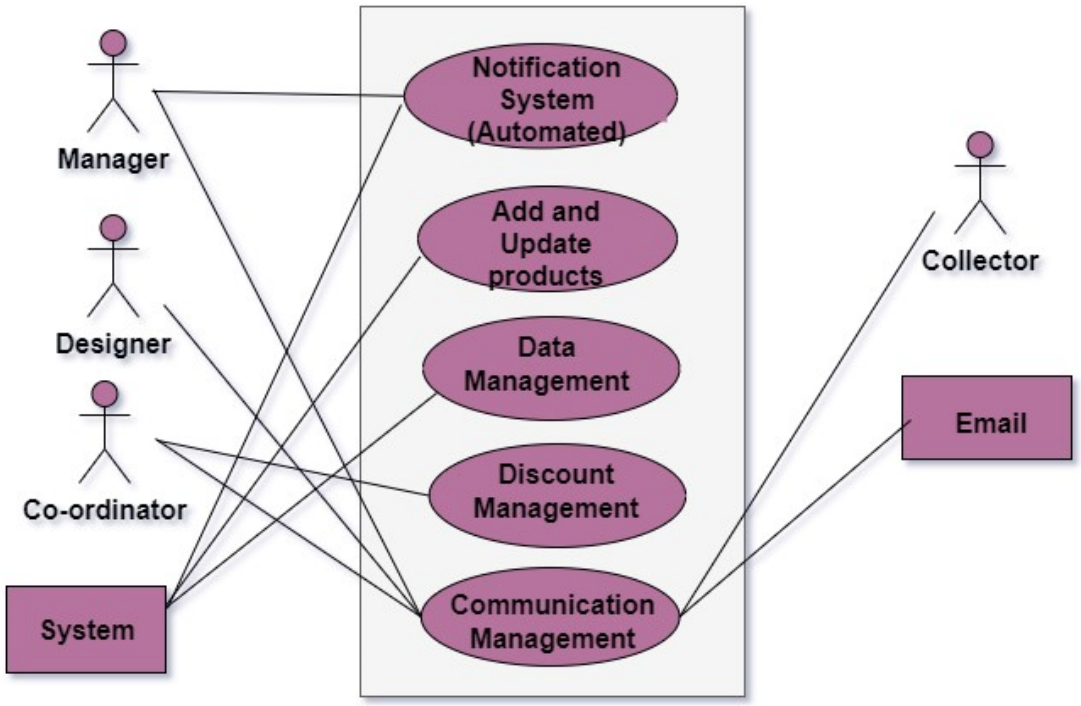


Fig-13: Product Management System

Action Reply for level 1.7

- Action: New product request is generated.
  Response: The system sends notifications to relevant employees, designers, and owners about the new product request.

- Action: Employees, designers, and owners receive notifications.
  Response: Employees, designers, and owners acknowledge the notifications, indicating their awareness of the new product request.

- Action: Manager receives notification acknowledgments.
  Response: The manager is informed about the new product request and communicates it to the coordinator.

- Action: Manager informs the coordinator about the new product request.
  Response: Coordinator receives information and takes action to manage the request.

- Action: Coordinator forwards the product request to the collector.
  Response: The collector receives the request details and starts managing the process.

- Action: Coordinator calls the customer to confirm product details.
  Response: The coordinator confirms product specifications, including date, time, price, quantity, customer's choices, and any specific demands from weavers.

- Action: Coordinator confirms details and informs the collector.
  Response: The collector receives information about the confirmed product details and begins managing the production process.

- Action: Collector manages product production.
  Response: The collector ensures the product is produced based on confirmed details, including date, time, price, quantity, choices, and weavers' demands.

- Action: Collector completes product production.
  Response: The collector sends a notification to the manager indicating that the product is ready for delivery.

- Action: Collector encounters issues preventing production.
  Response: If the collector is unable to produce the product, a notification is sent to the manager informing about the issue.

- Action: Product is ready or issues occur.
  Response: The system stores information about the product, including date, time, price, quantity, choices, demands of the weavers, and any applicable discounts.

- Action: Discount is applicable (before occasions).
  Response: If applicable, the system applies discounts before occasions, and the discounted price is stored.

Level:1.8

Name: **Database Management System**
Primary Actor: System
Secondary Actor: Cashier

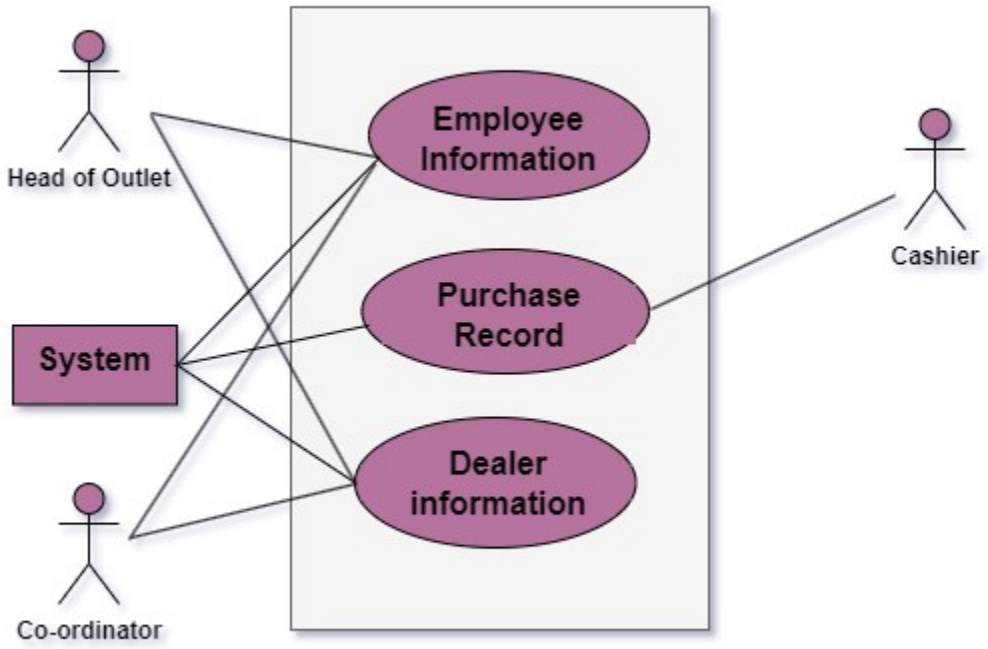


Fig-14: Database Management System

Level:1.9

Name: **Storage Management System**
Primary Actor: Head of Outlet, System
Secondary Actor: Collector, CCTV

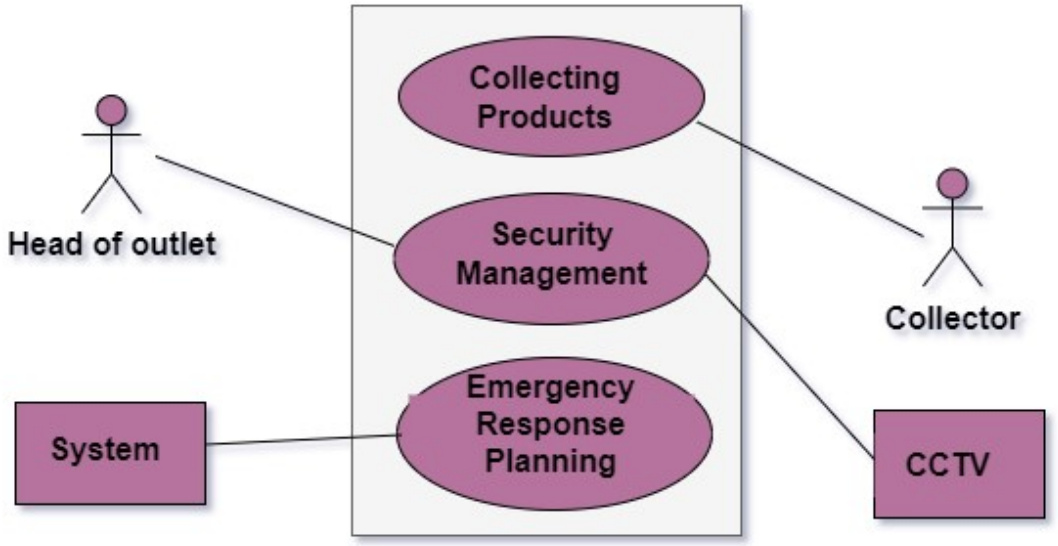


Fig-15: Storage Management System

Action Reply for level 1.8

- Action: Database accessible only to the owner.
  Response: Ensures secure access and control, safeguarding sensitive business information.

- Action: Security recordings stored with size and date.
  Response: Enables the owner to track and manage security recordings efficiently for monitoring and analysis.

- Action: Record employee details (employee ID, full name, contact number, NID number, email address, photo, permanent address, current address).
  Response: Provides a comprehensive record of employee information for HR and administrative purposes.

- Action: Record customer details (full name, phone number, email address, delivery addresses).
  Response: Facilitates customer relationship management and order fulfillment.

- Action: Record coordinator details (coordinator's name, phone number, email address, company name, and product name).
  Response: Supports coordination and communication with external partners.

- Action: Owner can easily add or remove tables and modify their information.

Response: Provides flexibility for the owner to adapt the database structure based on evolving business needs.
:

- Action: Track every produced good, incoming stock, and product expiration dates.
  Response: Enables efficient inventory management and helps prevent issues with expired goods.

- Action: Record every shipment and transaction distinctly.
  Response: Facilitates accurate tracking of business operations, ensuring transparency and accountability.

- Action: Record order details (product name, quantity, payment method, customer's name, customer phone number, total bill).
  Response: Aids in order processing, billing, and customer service.

- Action: Owner has centralized control over the entire database.
  Response: Ensures data integrity, security, and facilitates efficient decision-making.

Activity Diagram

An activity diagram is essentially a flowchart that shows how one activity leads to another. It is essentially a more sophisticated flowchart that depicts how one activity leads to another.

Level: 1

Name: **Details TACMS**

Reference: **Use Case Diagram Level – 1**

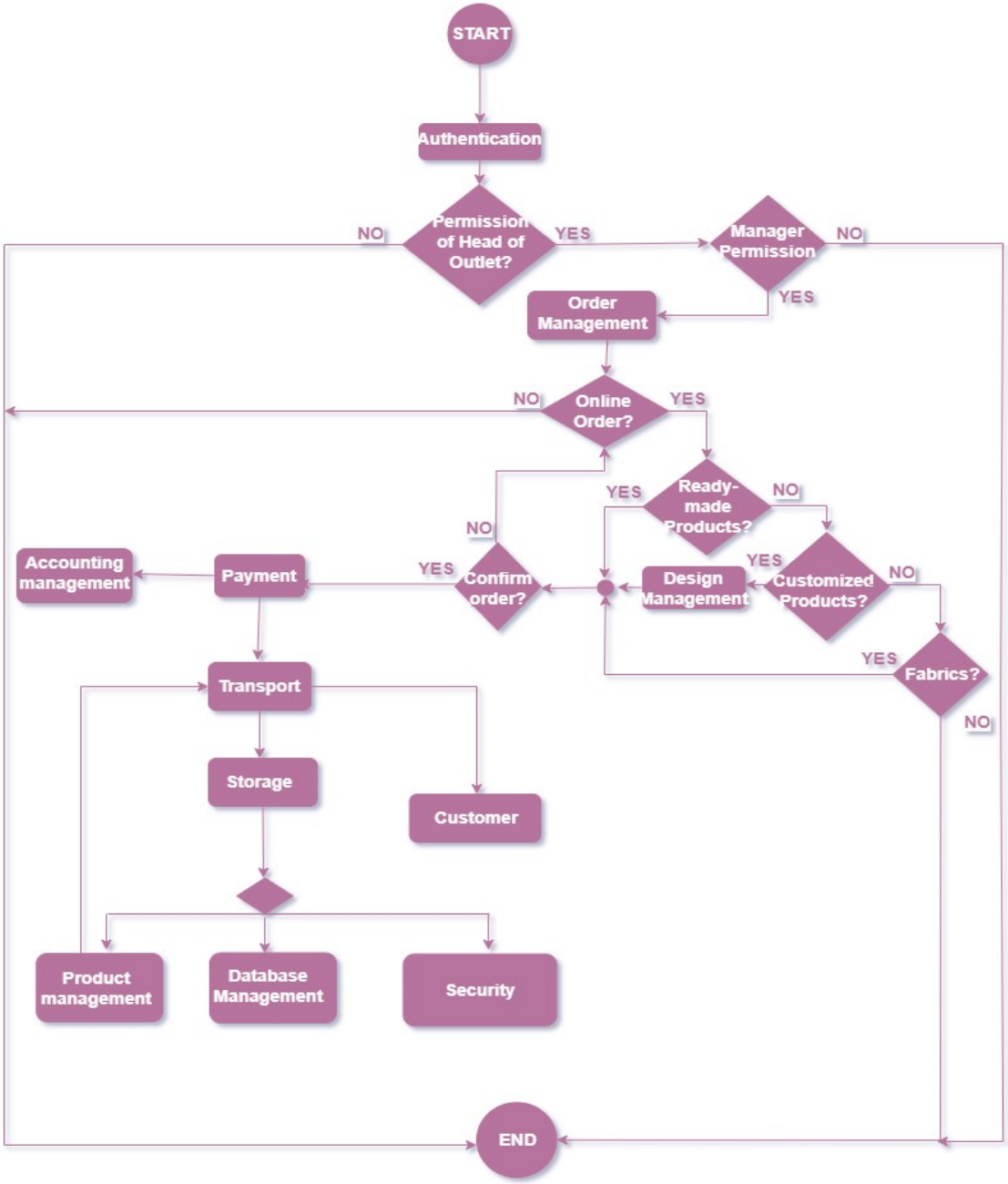


Fig-16: Details TACMS

Level: 1.1

Name: Registration System

Reference: Use Case Diagram Level – 1.1

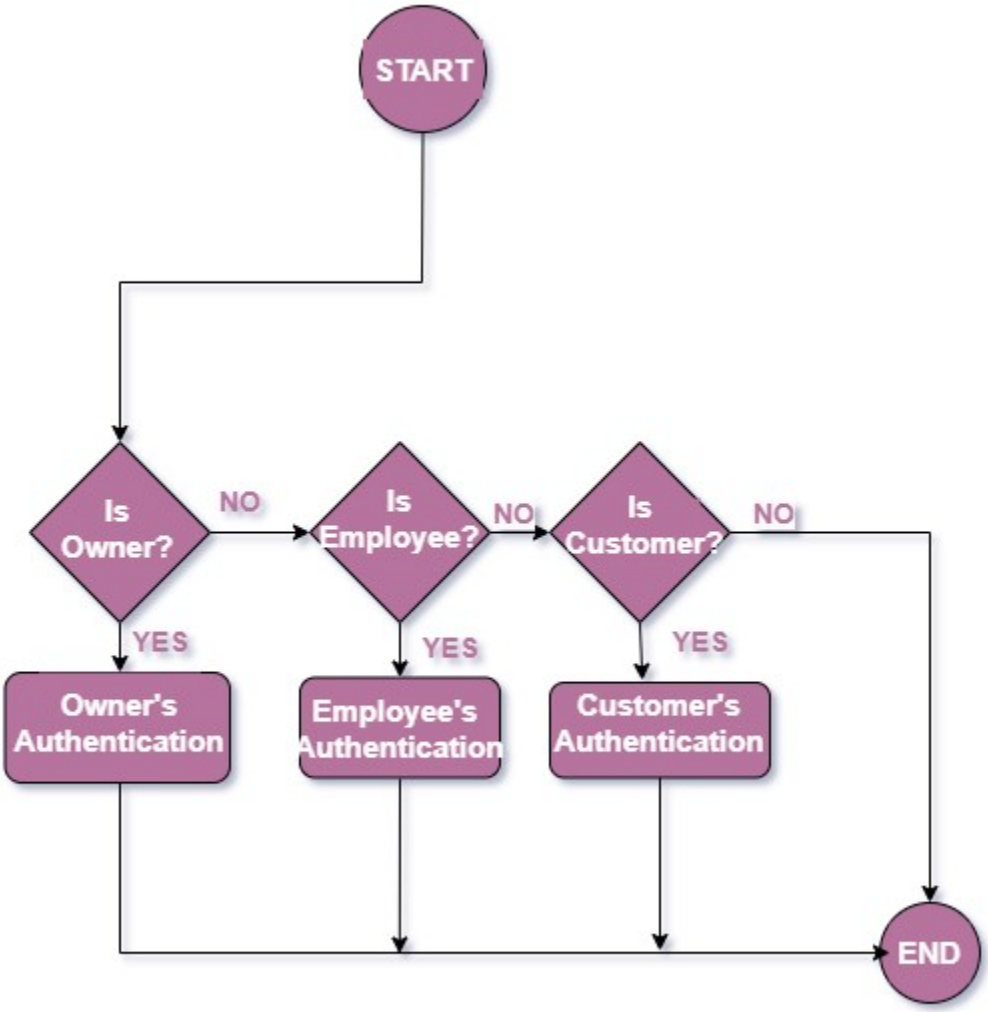


Fig-17: Registration System

Level: 1.1.1

Name: Employee's Authentication System

Reference: Use Case Diagram Level – 1.1.1

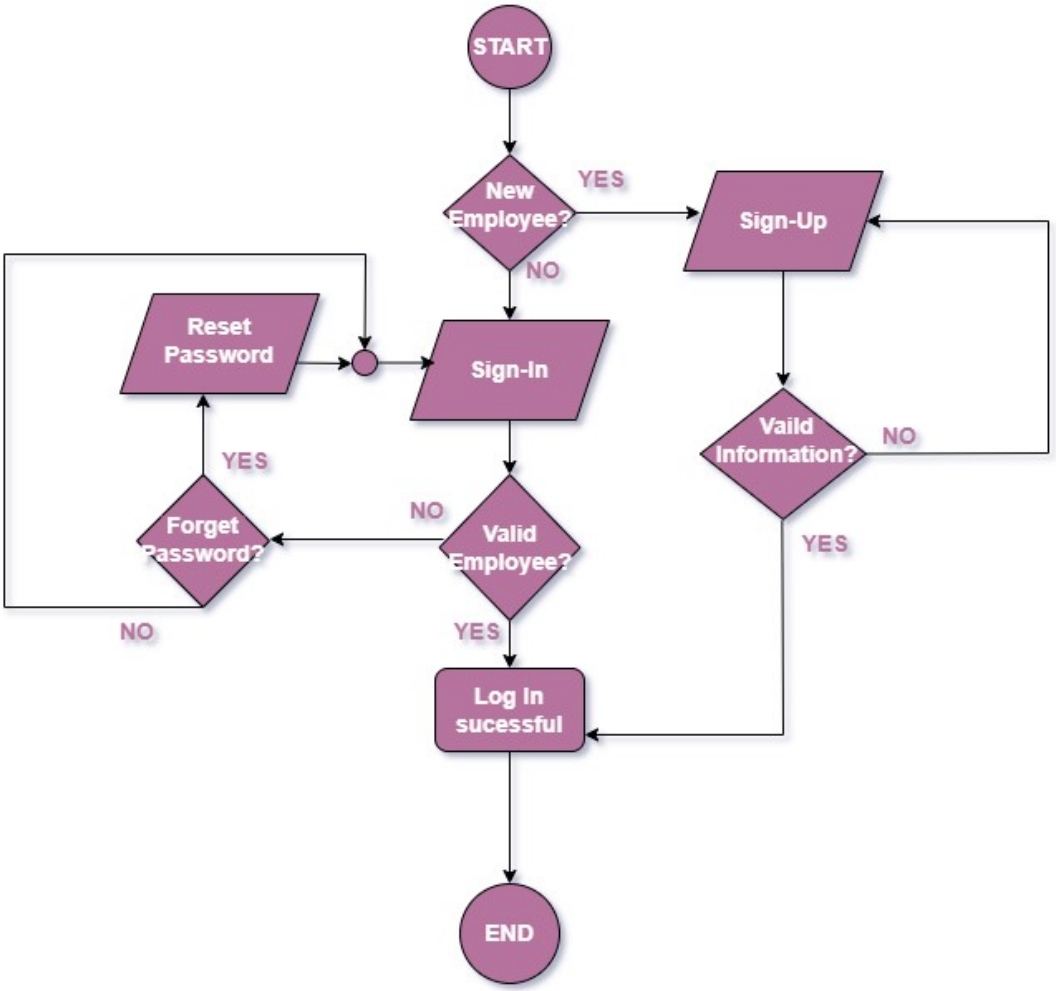


Fig-18: Employee Authentication System

Description of Activity Diagram level 1.1.1

Employees, selected by the owner, receive a sign-in email. During registration, they provide personal details and a password, with an option to save sign-in information. For forgotten passwords, a recovery process using the registered email ensures secure account access. The system prioritizes user convenience and security.

Level: 1.1.2

Name: Customer Authentication System

Reference: Use Case Diagram Level – 1.1.2

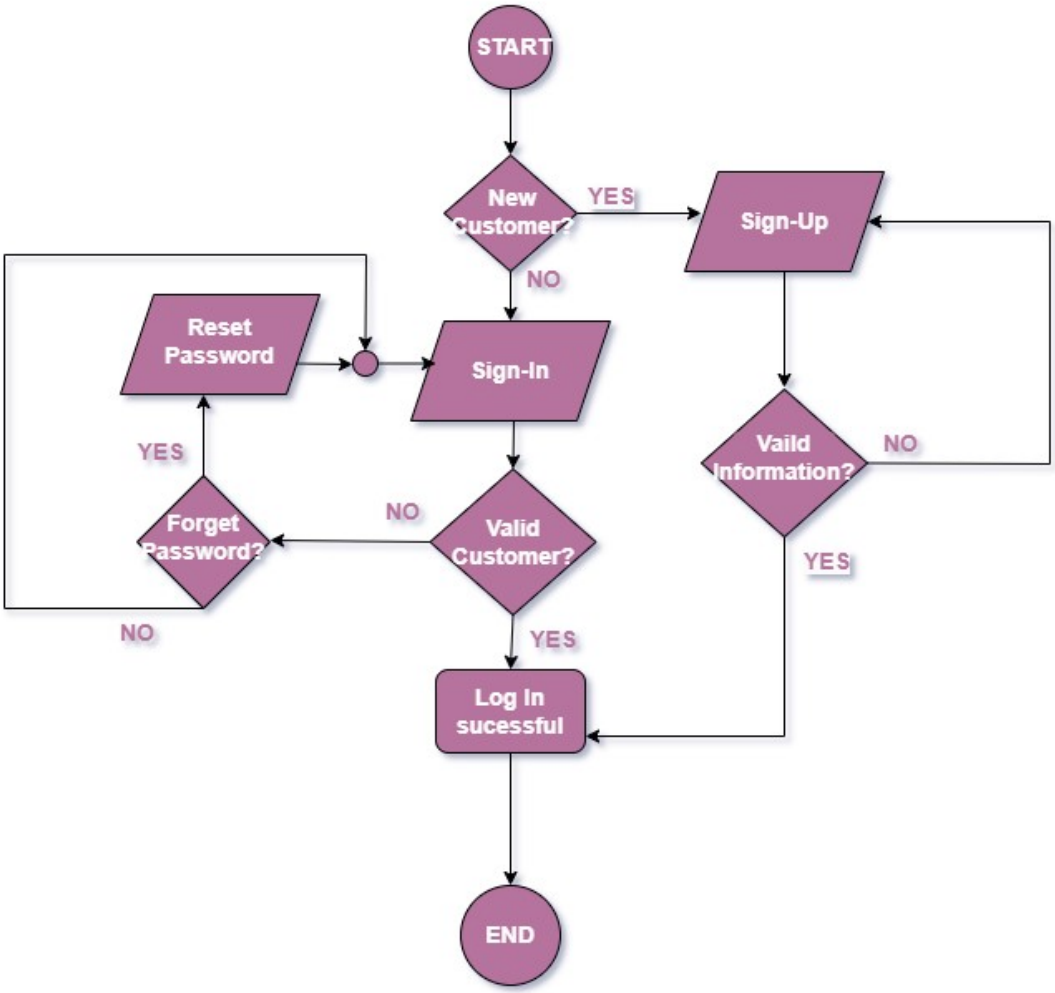


Fig-19: Customer Authentication System

Description of Activity Diagram level 1.1.2

Customers can easily sign in to the website by registering with their name, email, phone number, present address, and password. They have the option to store sign-in details. In case of a forgotten password, recovery is possible using either the registered email address or phone number, ensuring a user-friendly and flexible authentication process.

Level: 1.1.3

Name: **Owner Authentication System**

Reference: **Use Case Diagram Level – 1.1.3**

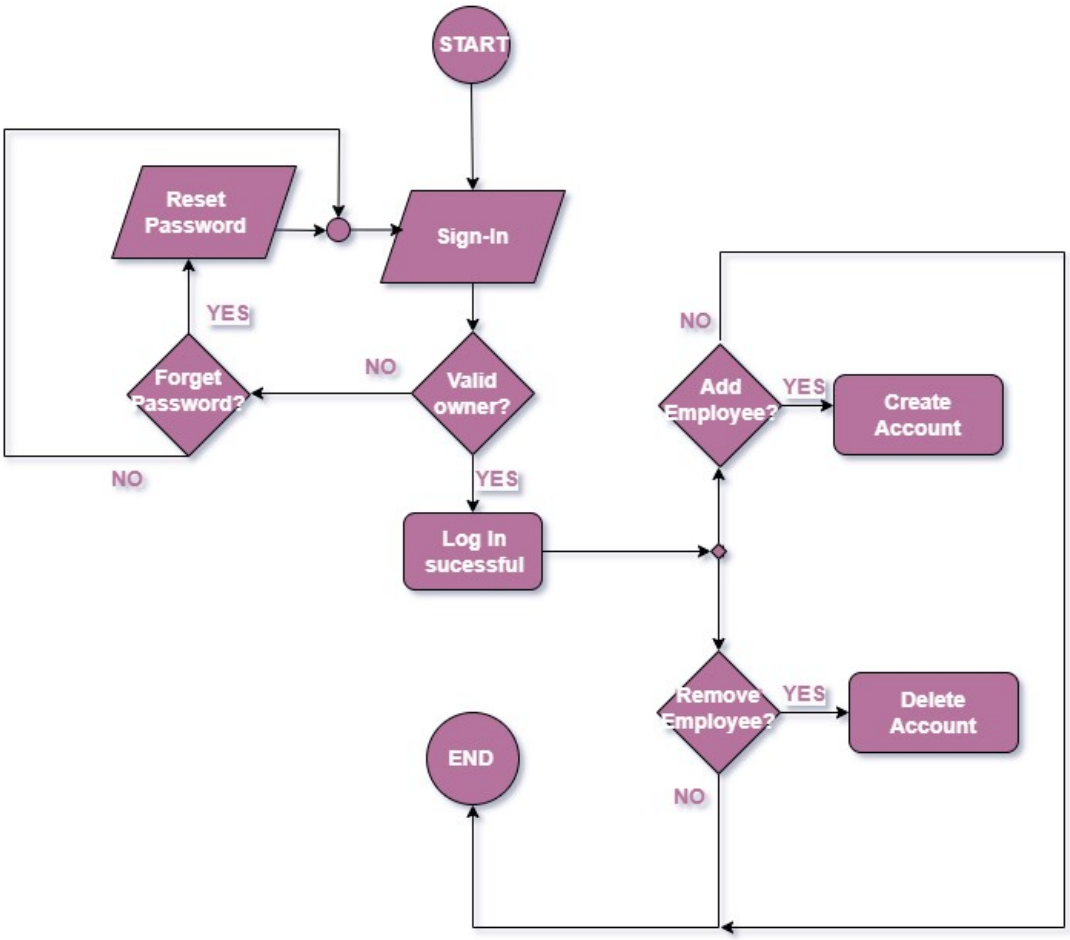


Fig-20:Owner Authentication System

Description of Activity Diagram level 1.1.3

The system incorporates a robust owner authentication process, requiring contact number, email, and password for secure sign-in. Owners can recover or modify details using their registered email. Additionally, owners have the authority to invite employees to create accounts via email and possess the capability to delete employee accounts as needed. This streamlined approach ensures secure access management, allowing owners to maintain control over the system's user base efficiently.

Level:1.2

Name: **Employee Management System**

Reference: Use Case Diagram Level – 1.2

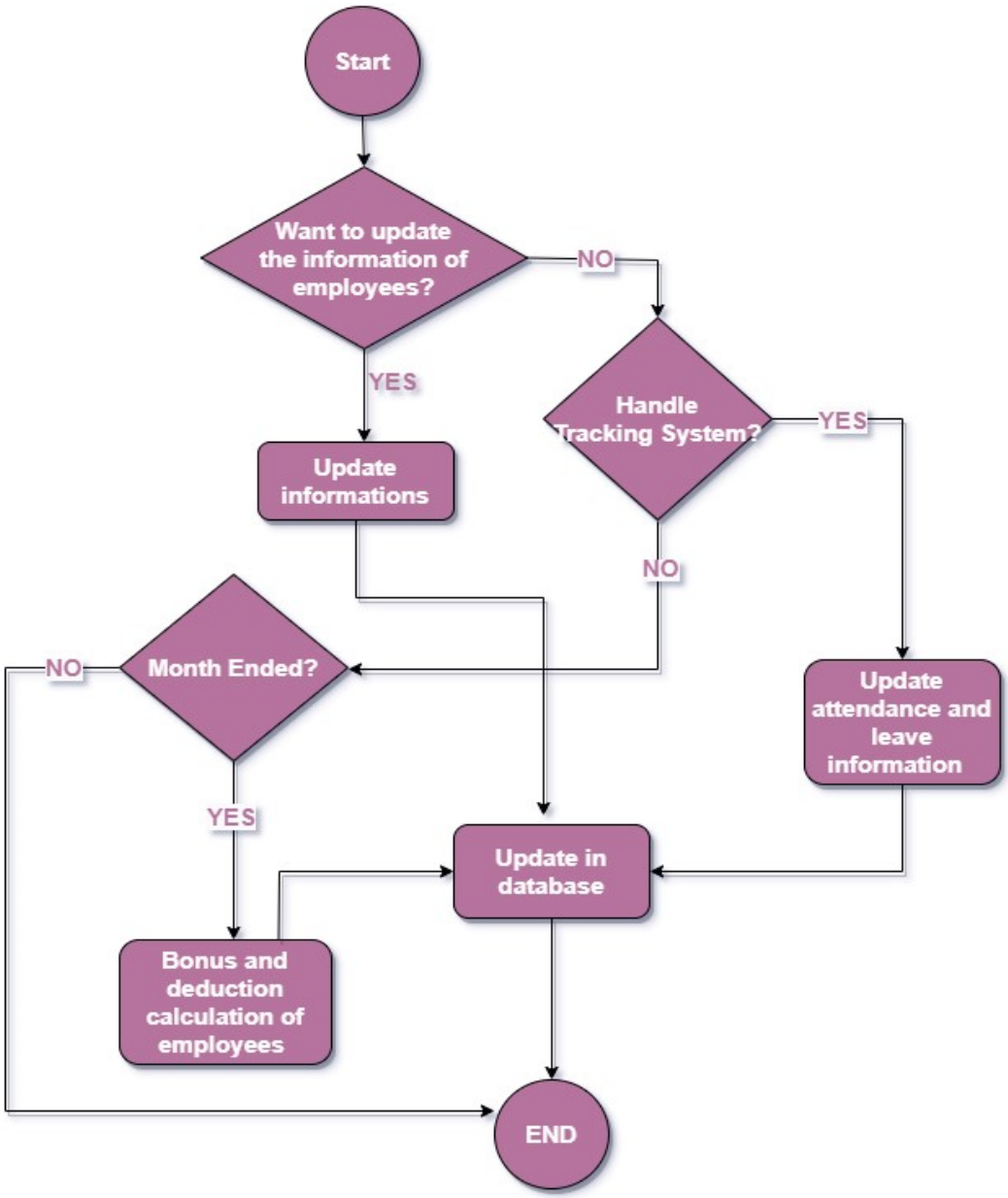


Fig-21:Employee Management System

Description of Activity Diagram level 1.2

This section outlines the monitoring of employee attendance and working hours, recording overtime hours and bonuses. The system also tracks employee leaves, with employees entitled to specific days off. Salary deductions are made for exceeding the allowed time off, while bonuses are given for fewer leaves. The summary emphasizes the importance of employee compliance with work hours and leave policies.

Level: 1.3

Name: **Order Management System**

Reference: Use Case Diagram Level – 1.3

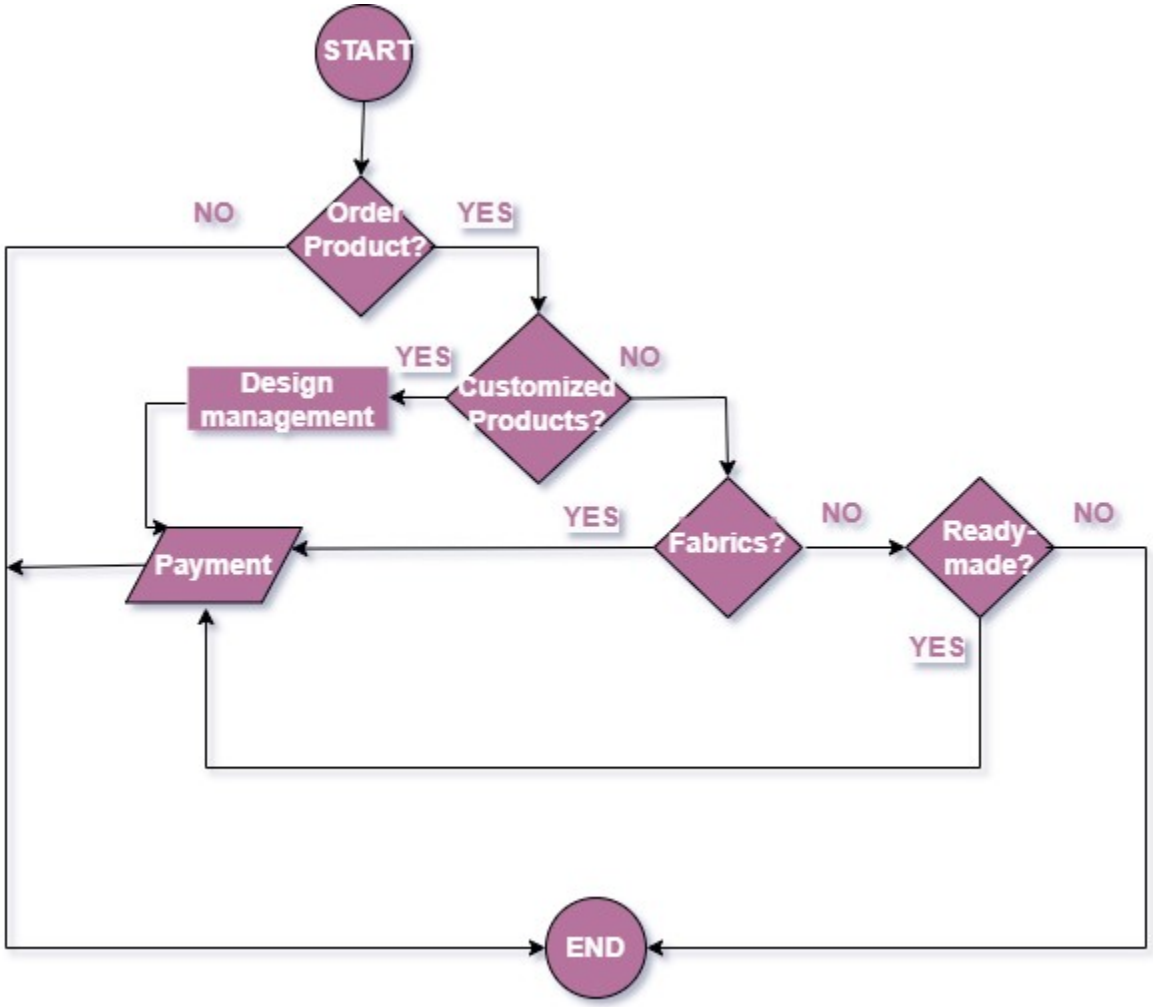


Fig-22:Order Management System

Description of Activity Diagram level 1.1.3

The order management system offers a template for ordering ready-made and customized products. Customers can pay with cash on delivery or digital methods like Bkash, Nagad, or Rocket for ready-made products, or a fixed amount for customized products using an advance payment system.

Level:1.3.1

Name: **Payment Management System**

Reference: **Use Case Diagram Level – 1.3.1**

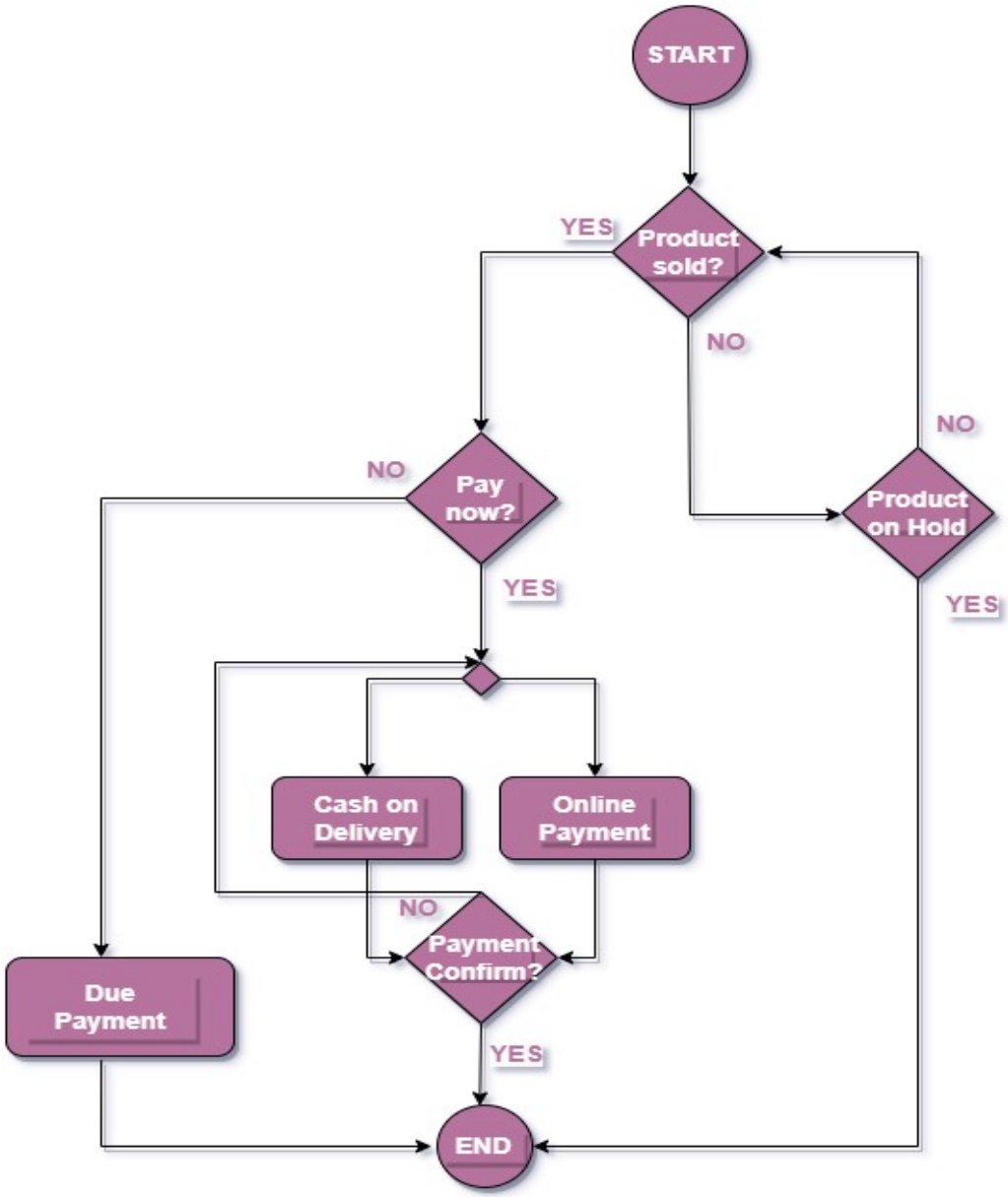


Fig-23:Payment Management System

Level:1.4

Name: **Transport Management System**

Reference: Use Case Diagram Level – 1.4

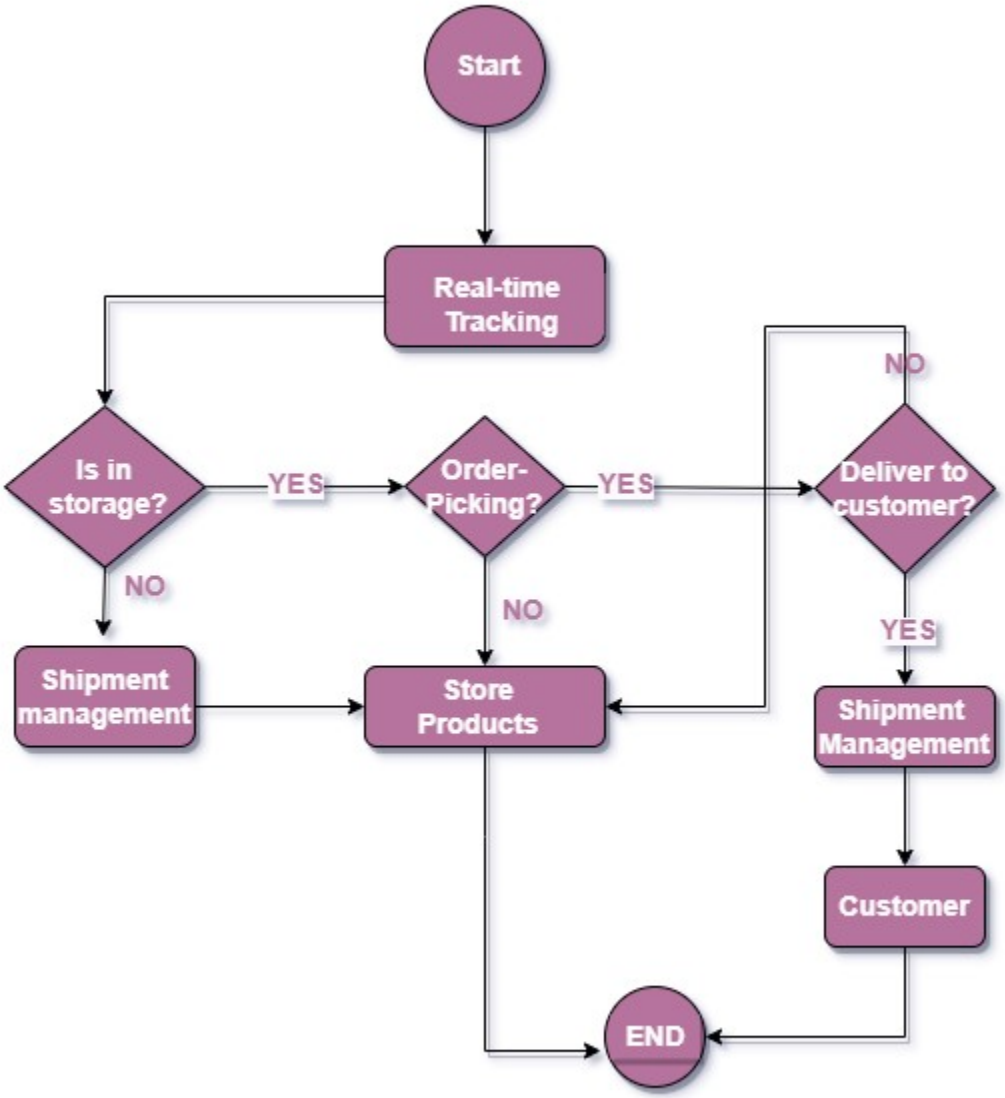


Fig-24:Transport Management System

Description of Activity Diagram level 1.4

The transportation management system allows for direct shipment of custom-designed products, with order pickers picking up pre-designed items for transportation. Real-time tracking allows for precise monitoring of vehicles, ships, and logistics, providing instant visibility into their location and status.

Level:1.5

Name: **Account Management System**

Reference: Use Case Diagram Level – 1.5

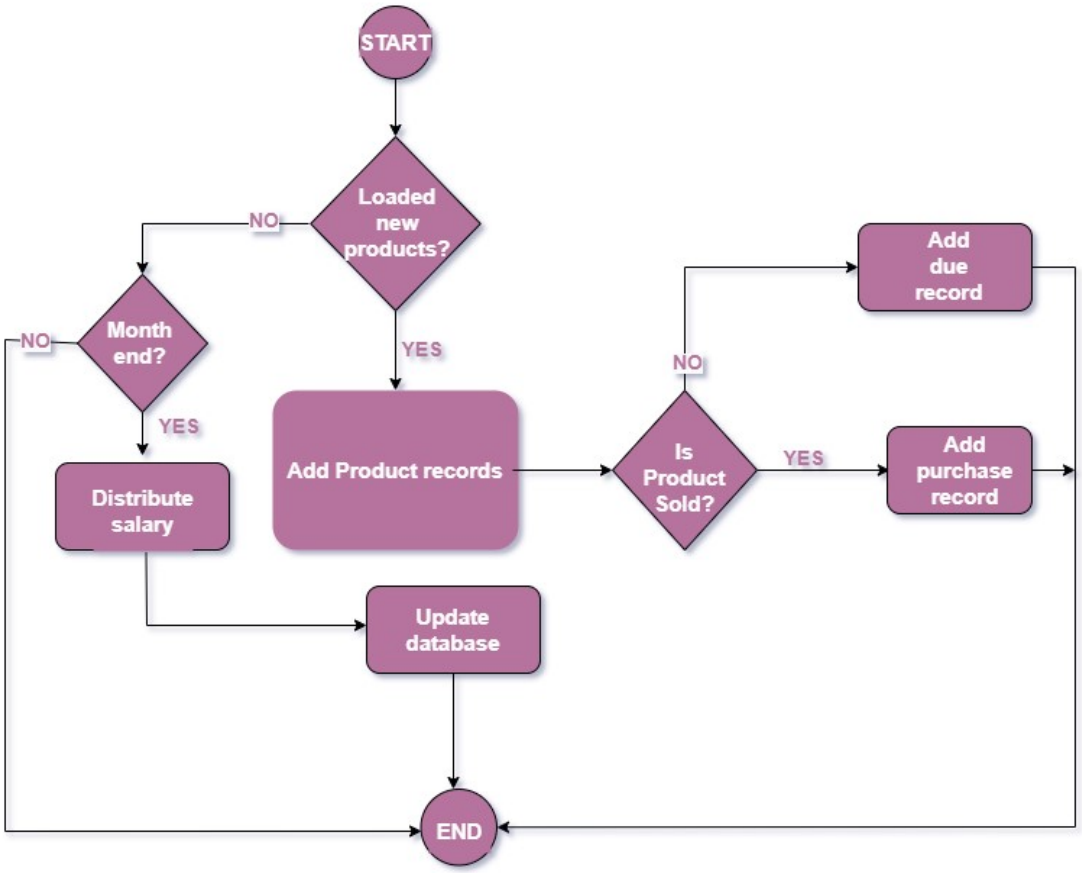


Fig-25:Account Management System

Description of Activity Diagram level 1.5

Account management is a crucial aspect of any store management system, storing information about all transactions. It includes inventory records, purchase records, due to records, salary records, and sell history. Inventory records track wholesale purchase records, product information, and price, which contribute to the shop's cost. Purchase records store product list, quantity, and due value, which calculate the shop's income and send it to customers via SMS. Records keep track of customer payments, with daily notifications and monthly/weekly reminders. Salary records store employee wages, overtime records, deductions, and bonuses. These are recorded in the database, and the owner manually decides the salary, updates it, and adjusts the bonus amount. The software then calculates the monthly salary and bonus amounts.

Level:1.6

Name:Design Management System

Reference: Use Case Diagram Level – 1.6

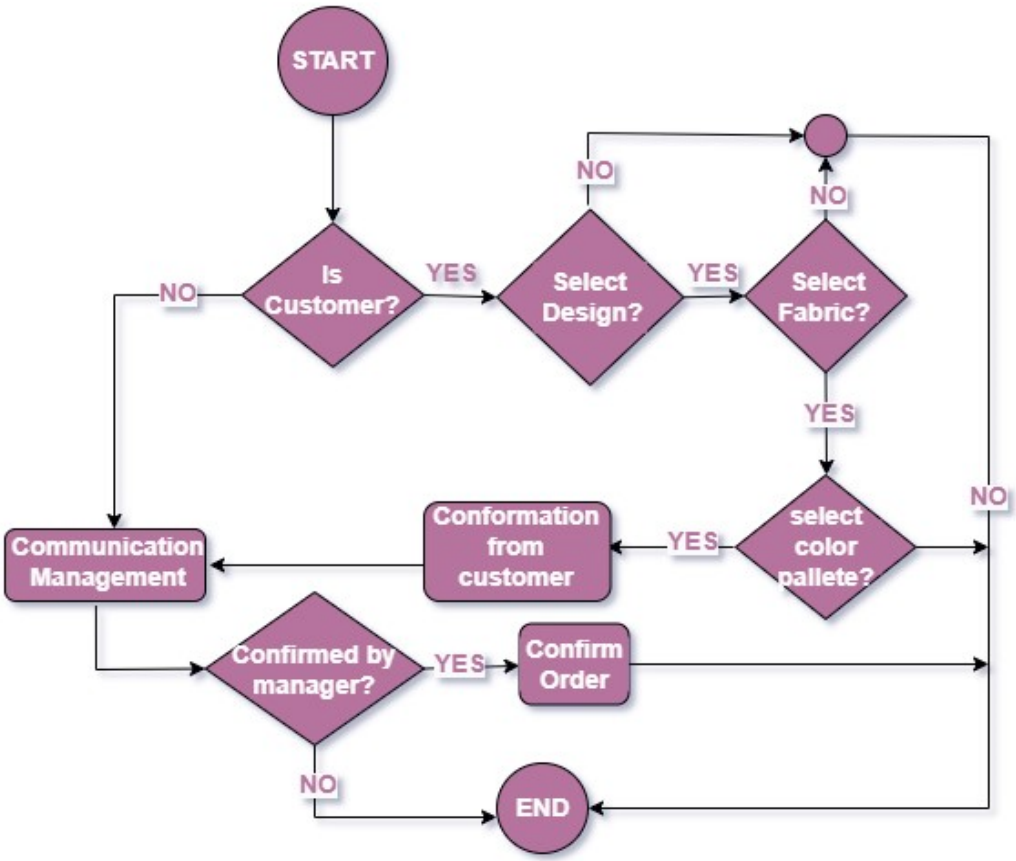


Fig-26:Design Management System

Description of Activity Diagram level 1.6

The design management system allows customers to create their own 3D models for customized products, including color and fabric options. The system generates these designs and sends notifications to designers and workers before the order is placed.

Level:1.7

Name: **Product Management System**

Reference: Use Case Diagram Level – 1.7

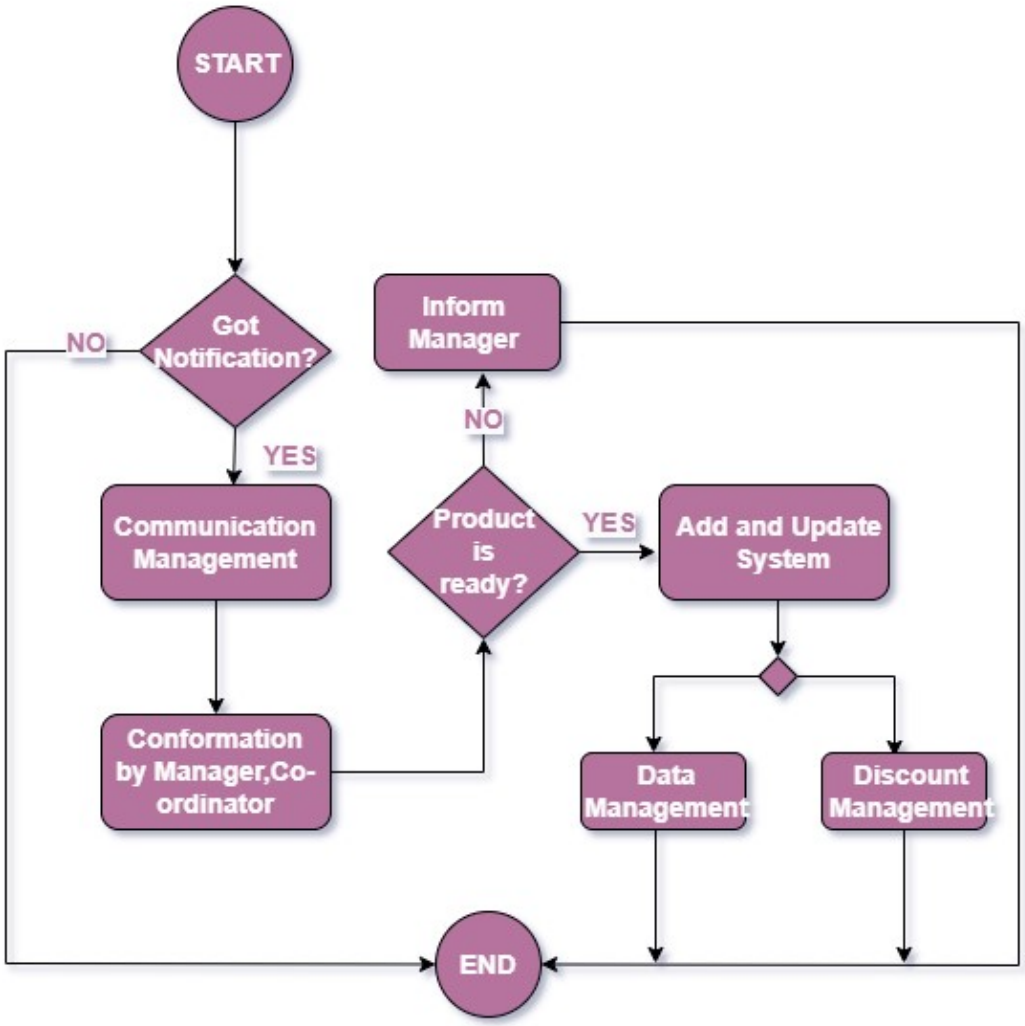


Fig-27:Product Management System

Description of Activity Diagram level 1.7

The product management system involves notifications from employees, designers, and owners about product requests. The manager informs the coordinator, who forwards the request to the collector and confirms the product from the customer. Collectors manage and inform the manager when the product is ready, and if they are unable to make the product, they inform the manager. The system stores information about the product, including date, time, price, quantity, choice, demand, and discounts.

Level:1.8

Name: **Storage Management System**

Reference: Use Case Diagram Level – 1.8

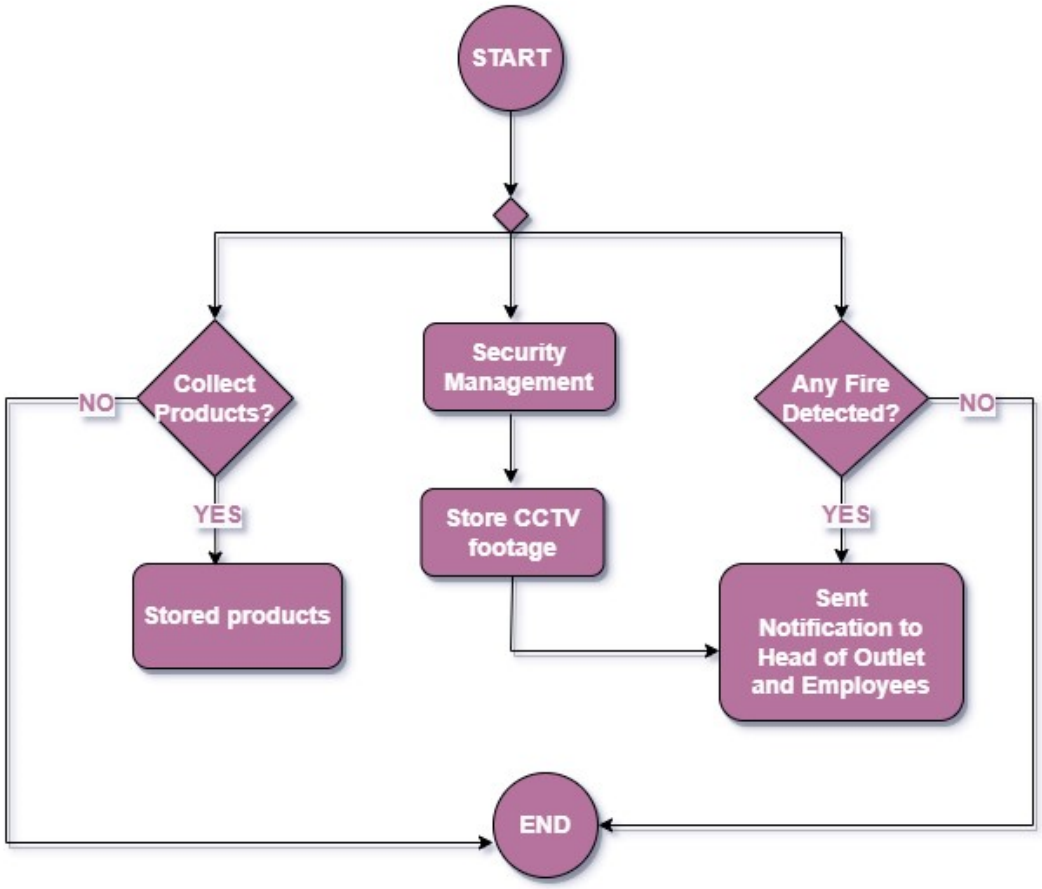


Fig-28:Storage Management System

Description of Activity Diagram level 1.8

The storage management system integrates with order fulfillment for streamlined operations. It consists of custom-designed and pre-designed products, with the collector dividing the products into categories. Security services are crucial for managing the store efficiently. CCTV cameras are used to monitor the store, with only the owner having access to the video footage. The system keeps all recordings for a month before notifying the account owner if they want to delete them. The owner can delete or keep the recordings for as long as they wish. A fire alarm option is also available, triggering a notification and alarm if the security camera detects smoking.

Swimlane Diagrams:

A swimlane diagram is a flowchart showing who is responsible for what throughout a flowchart that shows who is responsible for what throughout a certain procedure. Similar to a flowchart, it depicts a process from beginning to end, but it also classifies these phases to indicate which departments or individuals are in charge of each set of actions. Using a pool's lanes as an analogy, it places process stages within the vertical or vertical "swimlanes" of a specific division, team, or worker, as a result ensuring accountability and clarity.

Level: 1

Name: Details TACMS

Reference: Use Case Diagram & Activity Diagram Level – 1

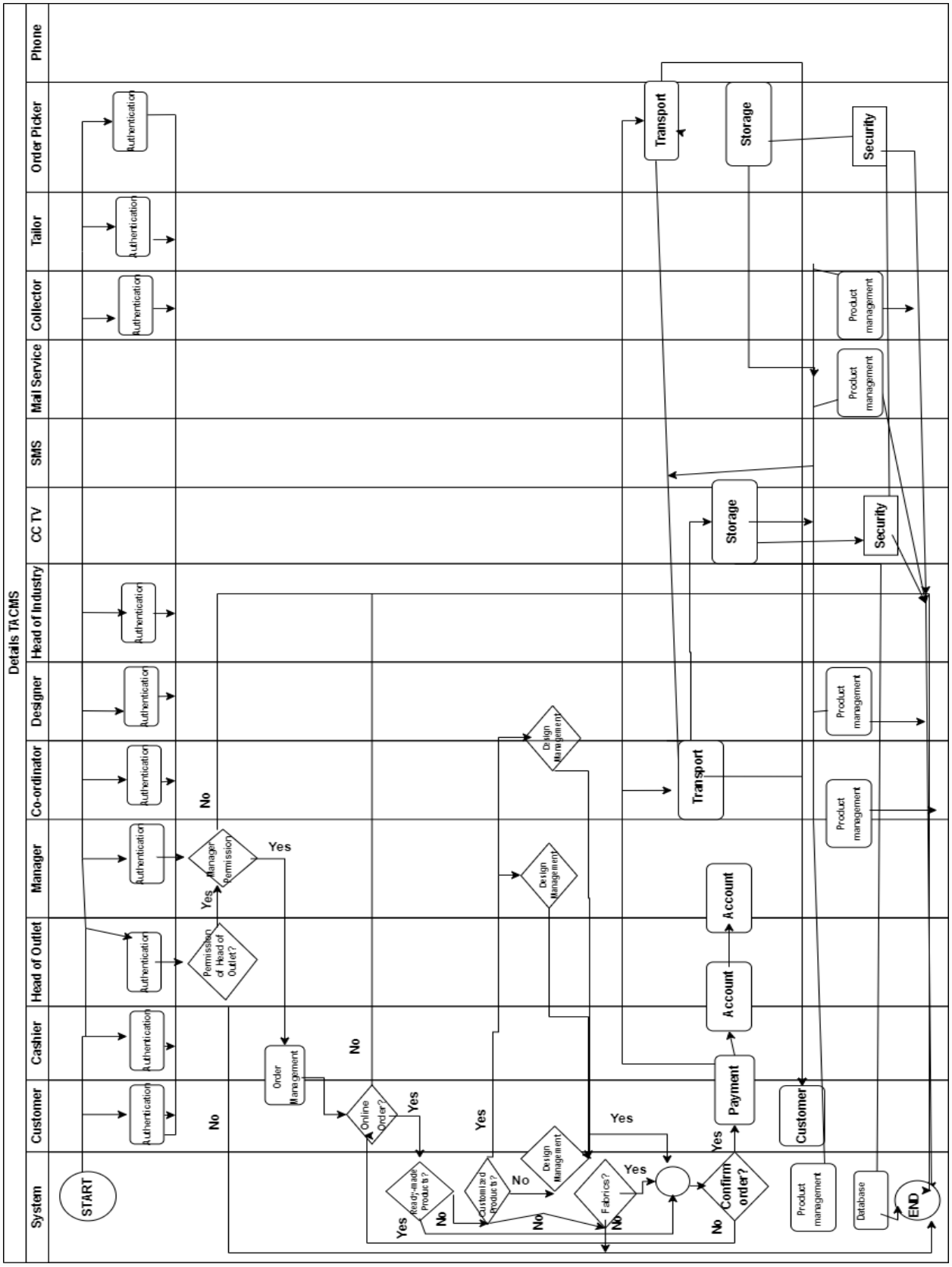


Fig-29: Details TACMS

Level: 1.1

Name: **Authentication**

Reference: **Use Case Diagram & Activity Diagram Level – 1.1**

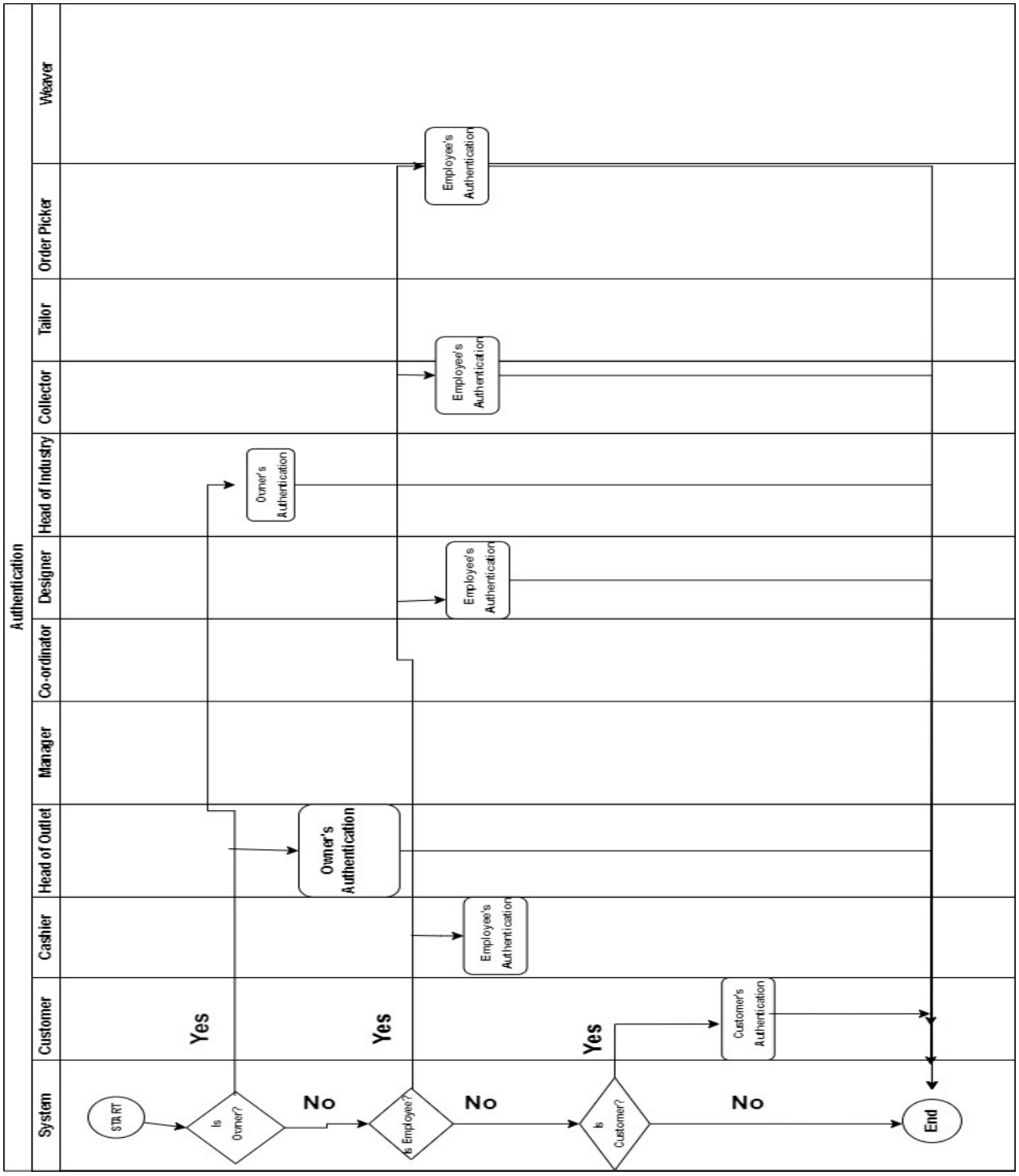
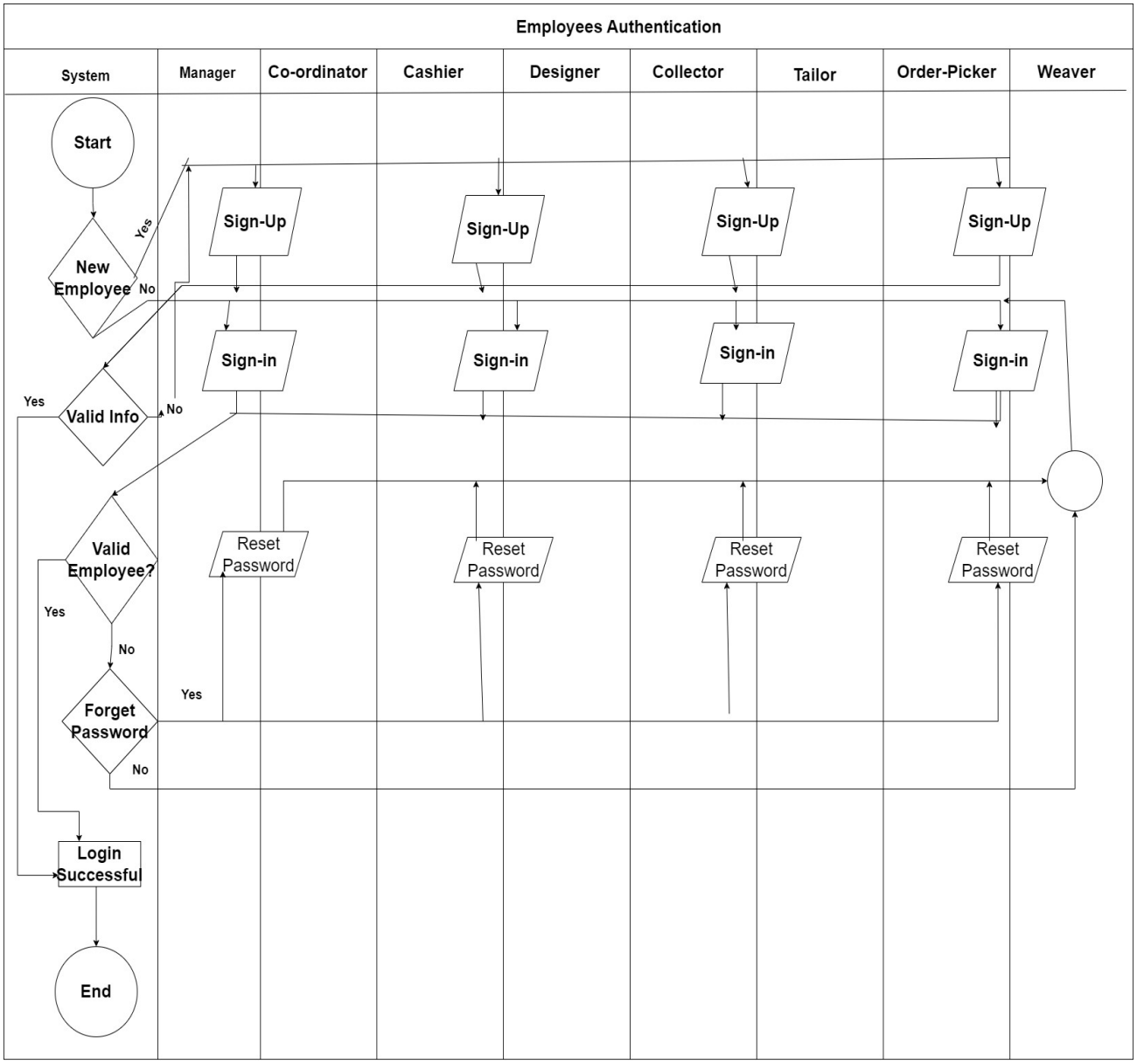


Fig-30: Registration System

Level: 1.1.1

Name: **Employee Authentication**

Reference: **Use Case Diagram & Activity Diagram Level – 1.1.1**



No

Fig-31: Employee Authentication

Level: 1.1.2

Name: Owner Authentication

Reference: Use Case Diagram & Activity Diagram Level – 1.1.2

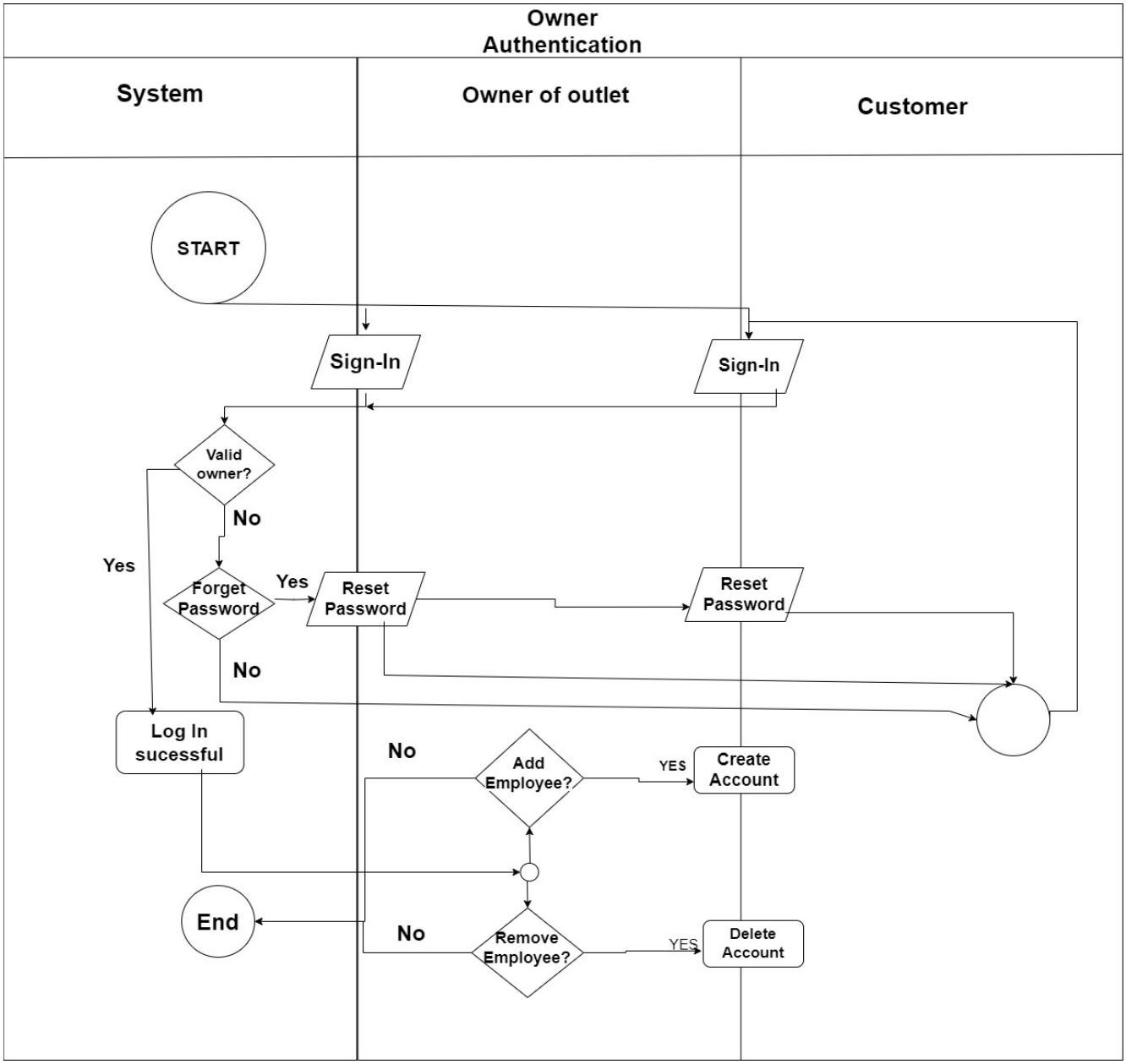


Fig-32:Owner Authentication System

Level: 1.1.3

Name: **Customer Authentication**

Reference: **Use Case Diagram & Activity Diagram Level – 1.1.2**

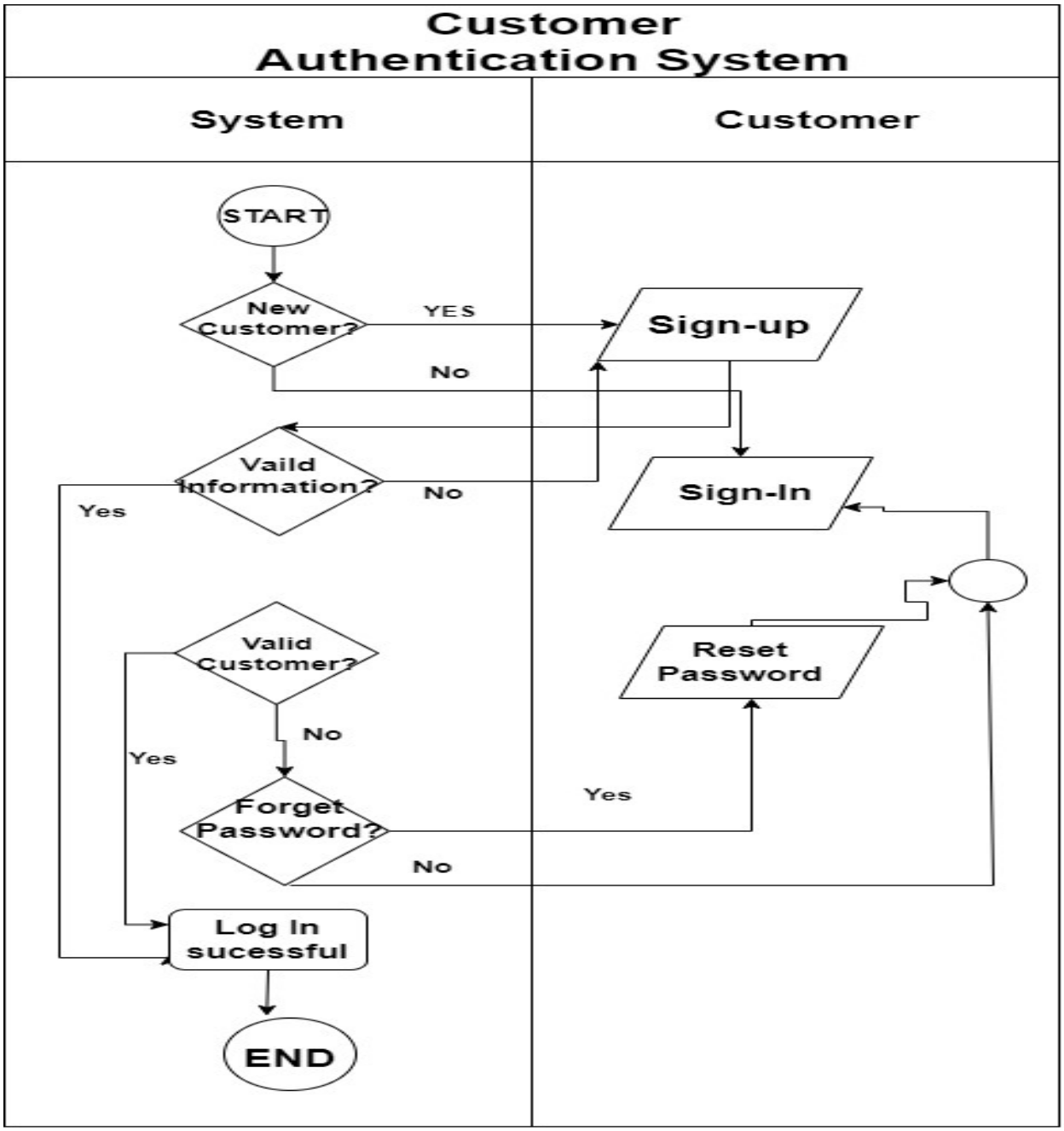


Fig-32:Customer Authentication System

Level: 1.2

Name: Employee Management System

Reference: Use Case Diagram & Activity Diagram Level – 1.2

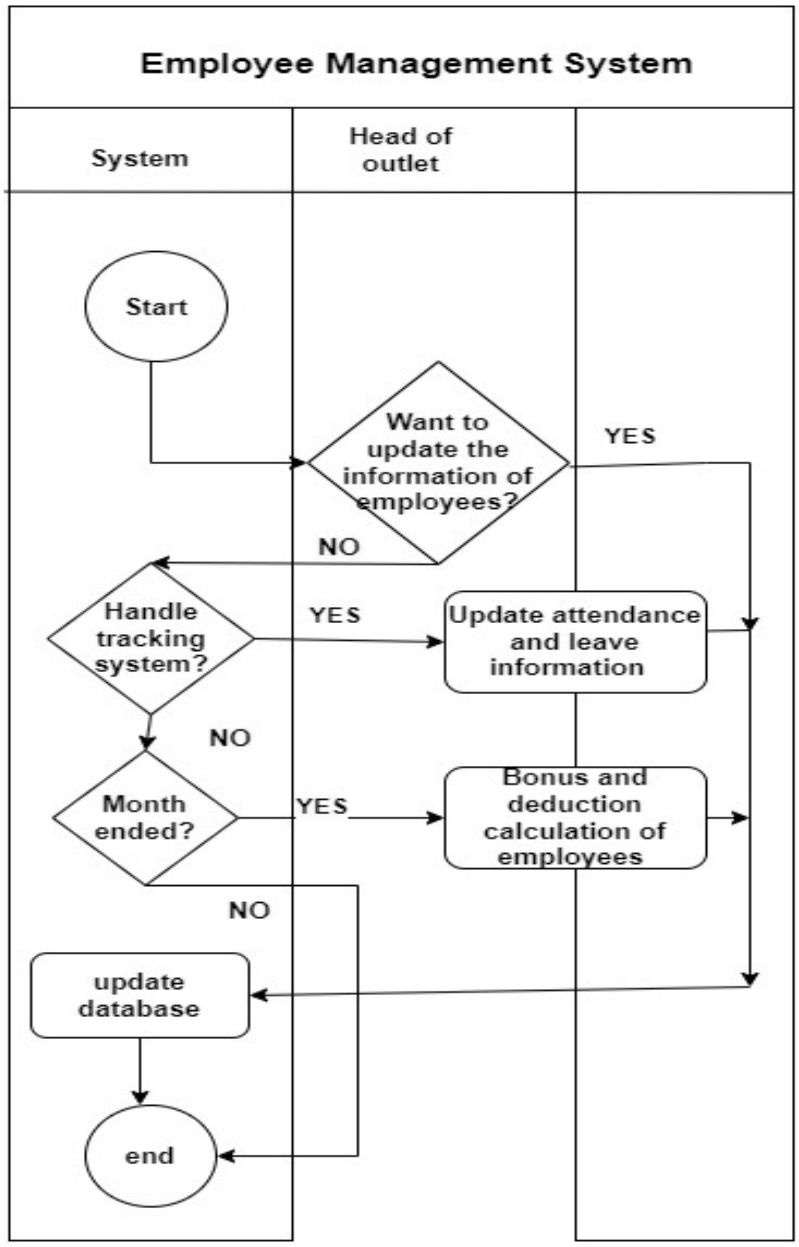


Fig-33:Employee Management System

Level: 1.3

Name: **Order Management**

Reference: **Use Case Diagram & Activity Diagram Level – 1.3**

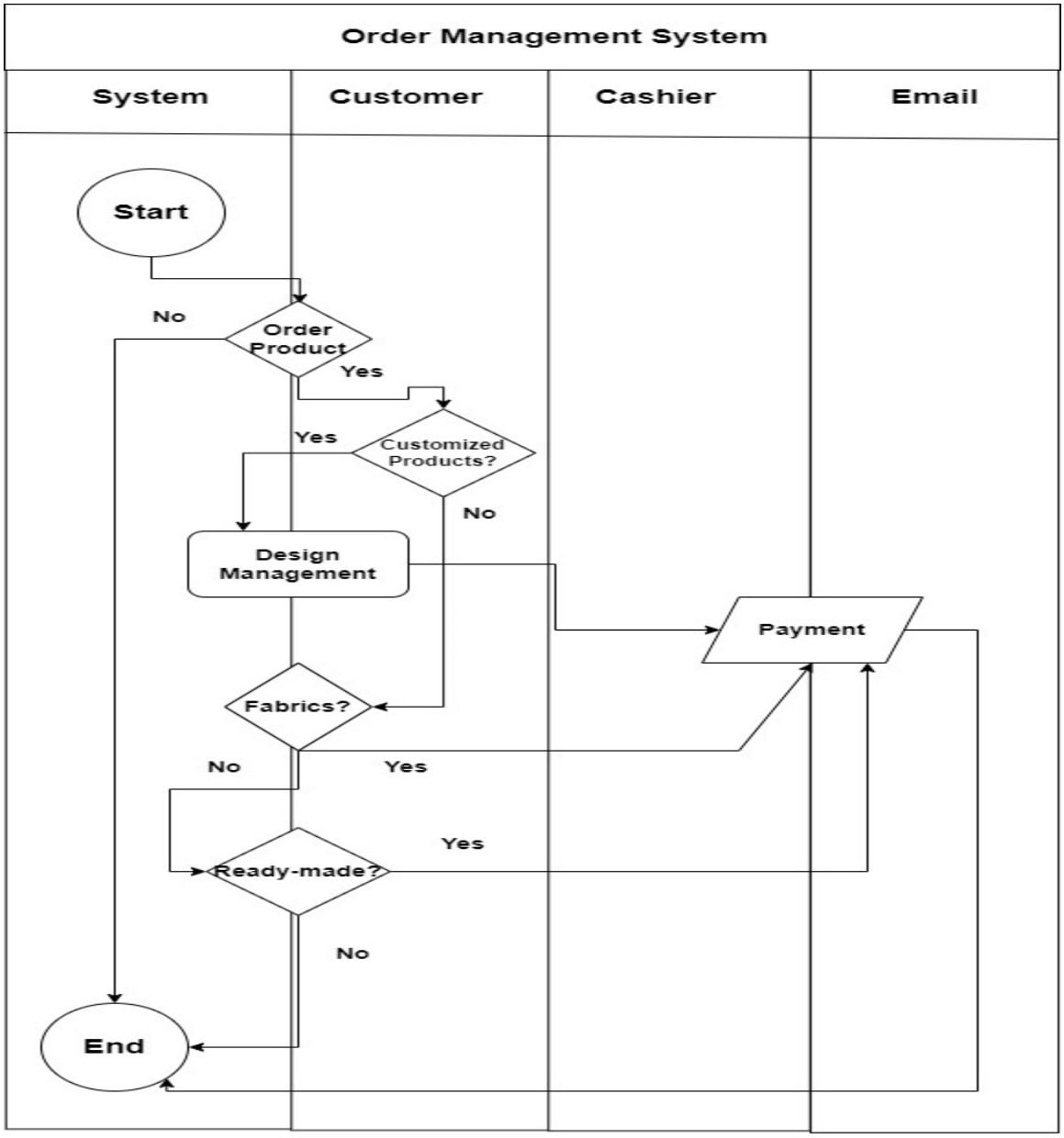


Fig-33:Order Management System

Level: 1.3.1

Name: Payment Management System

Reference: Use Case Diagram & Activity Diagram Level – 1.3.1

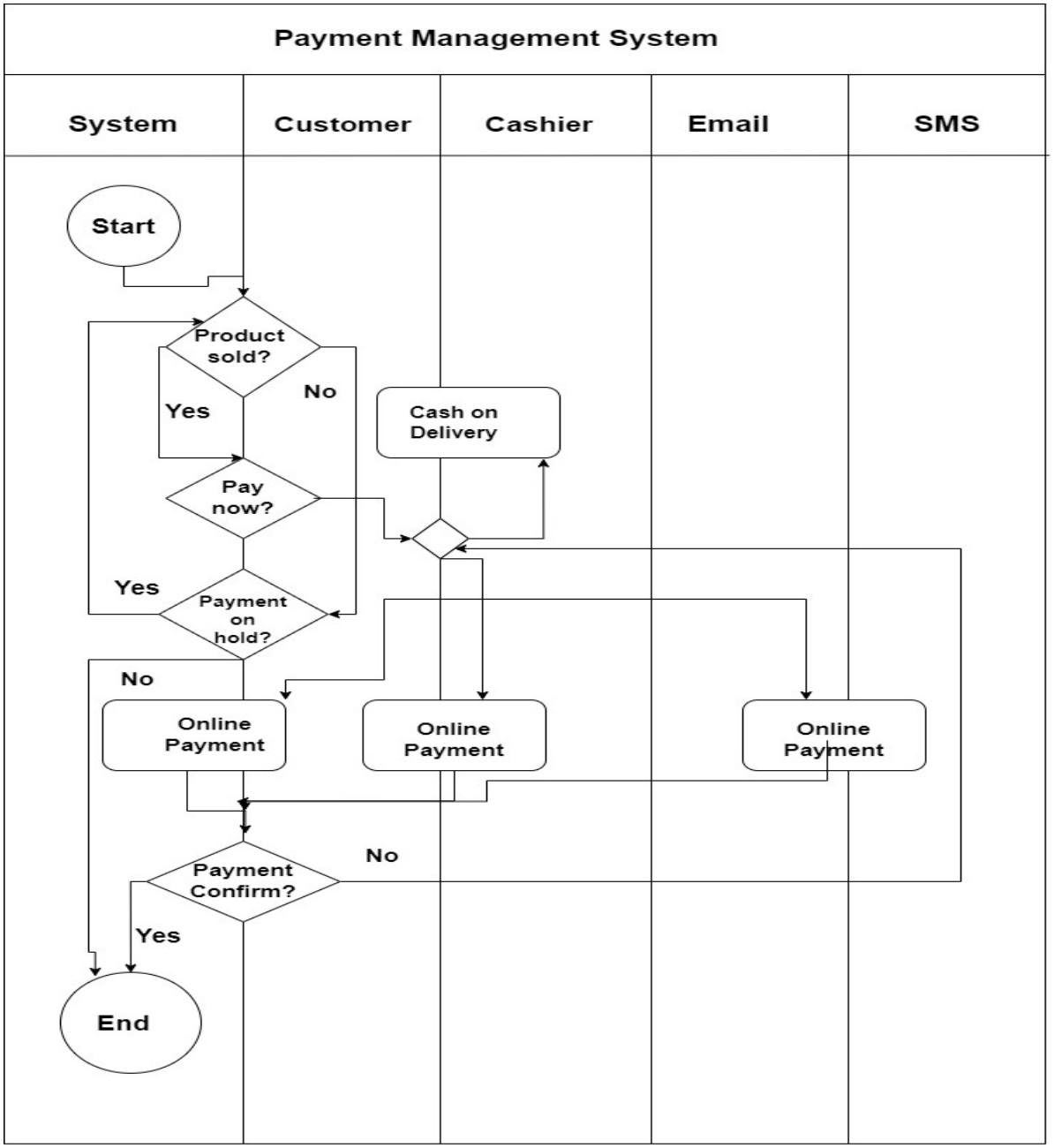


Fig-33:Payment Management System

Level: 1.4

Name: Transport Management System

Reference: Use Case Diagram & Activity Diagram Level – 1.

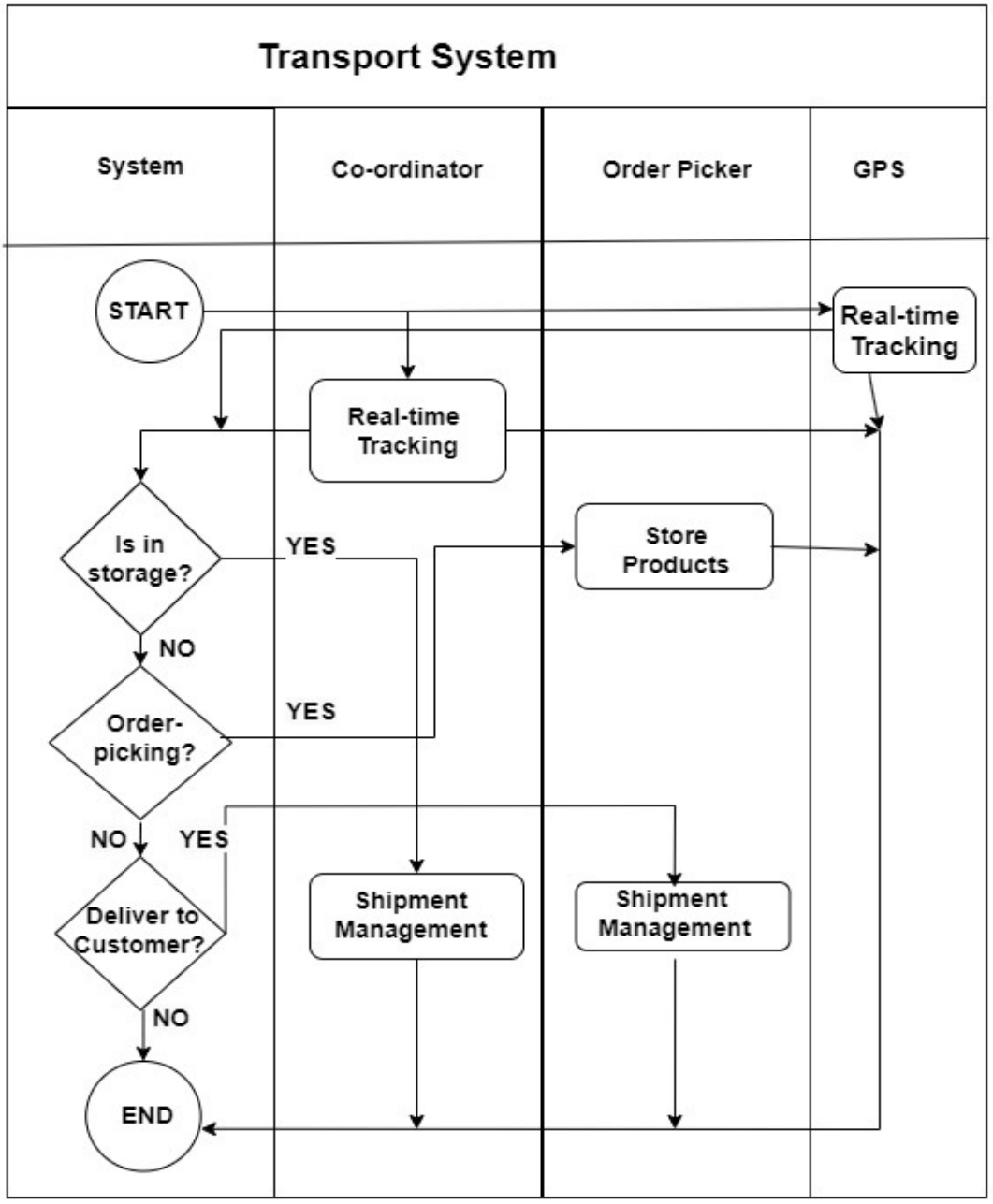


Fig-34:Transport Management System

Level: 1.5

Name: Account Management System

Reference: Use Case Diagram & Activity Diagram Level – 1.

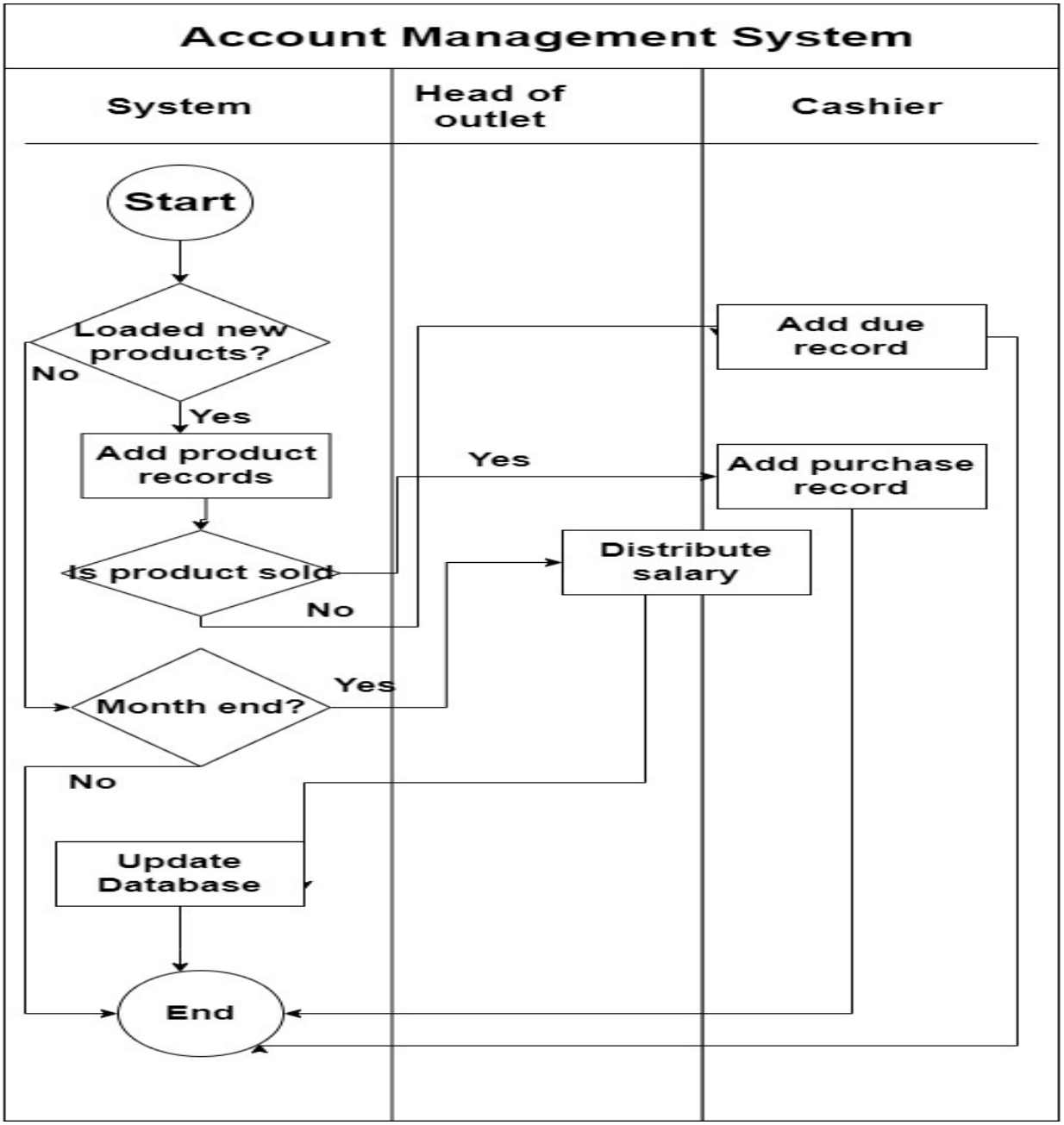


Fig-35:Account Management System

Level: 1.6

Name: Design Management System

Reference: Use Case Diagram & Activity Diagram Level – 1.6

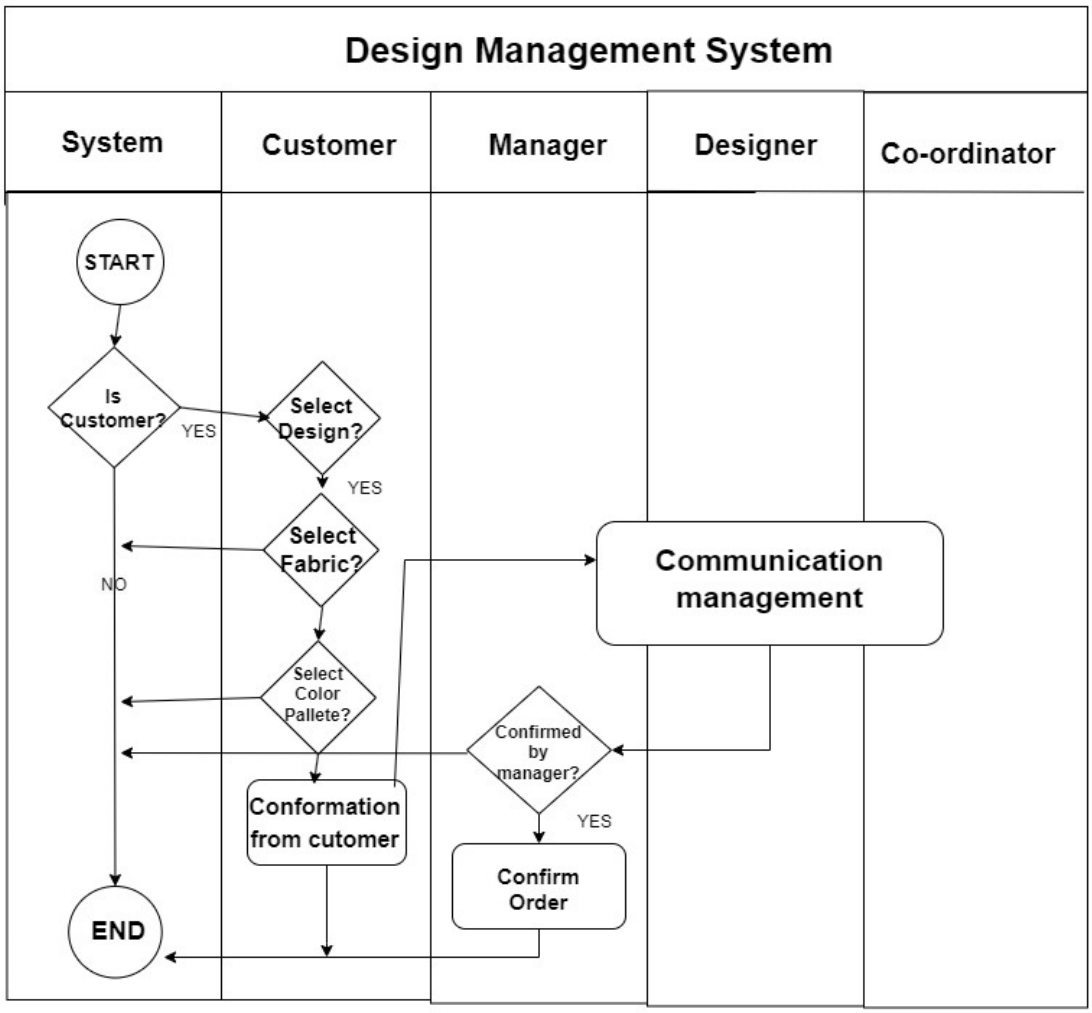


Fig-36:Design Management System

Level: 1.7

Name: **Product Management System**

Reference: **Use Case Diagram & Activity Diagram Level – 1.7**

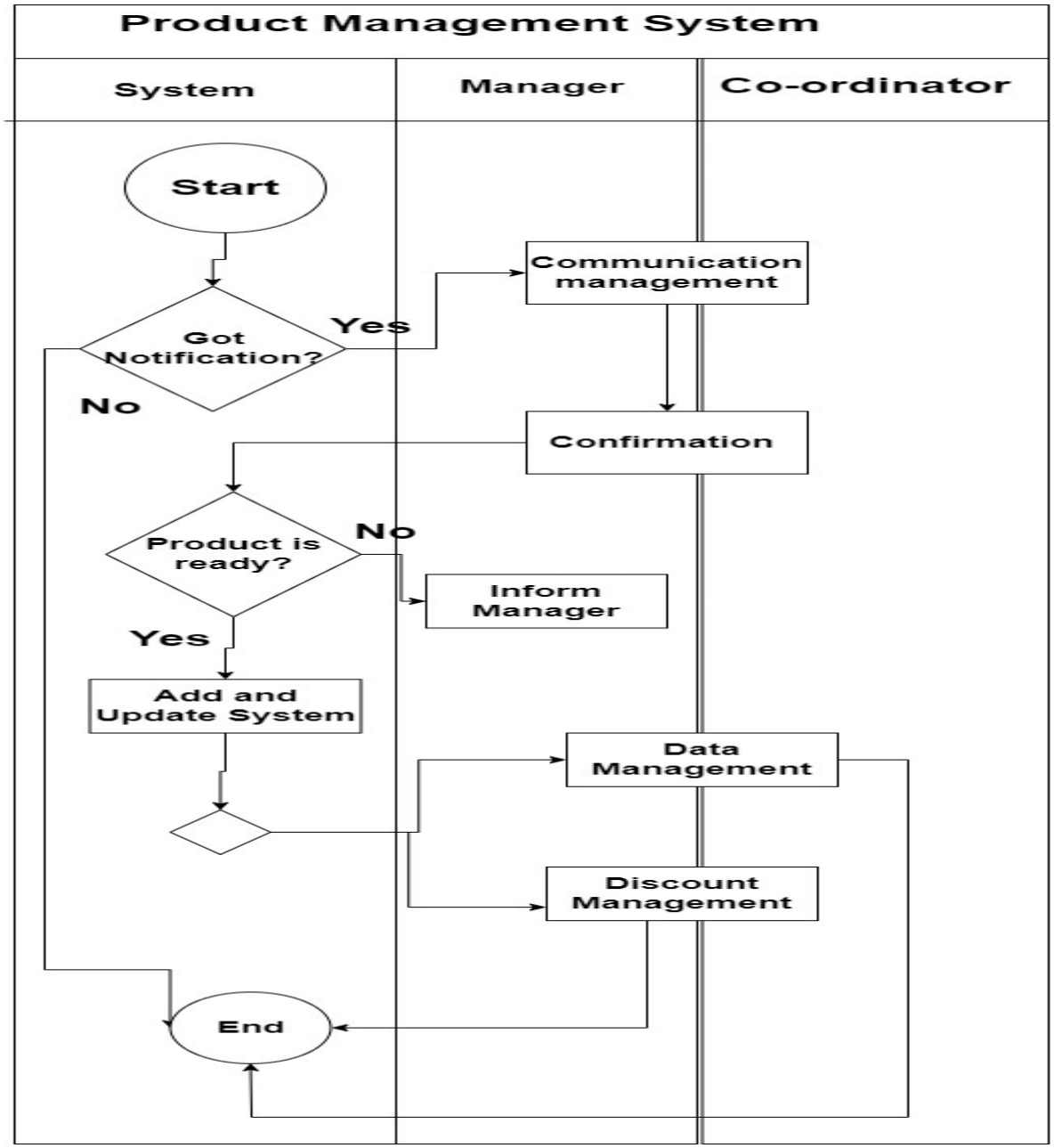


Fig-37:Product Management System

Level: 1.8

Name: Storage Management System

Reference: Use Case Diagram & Activity Diagram Level – 1.8

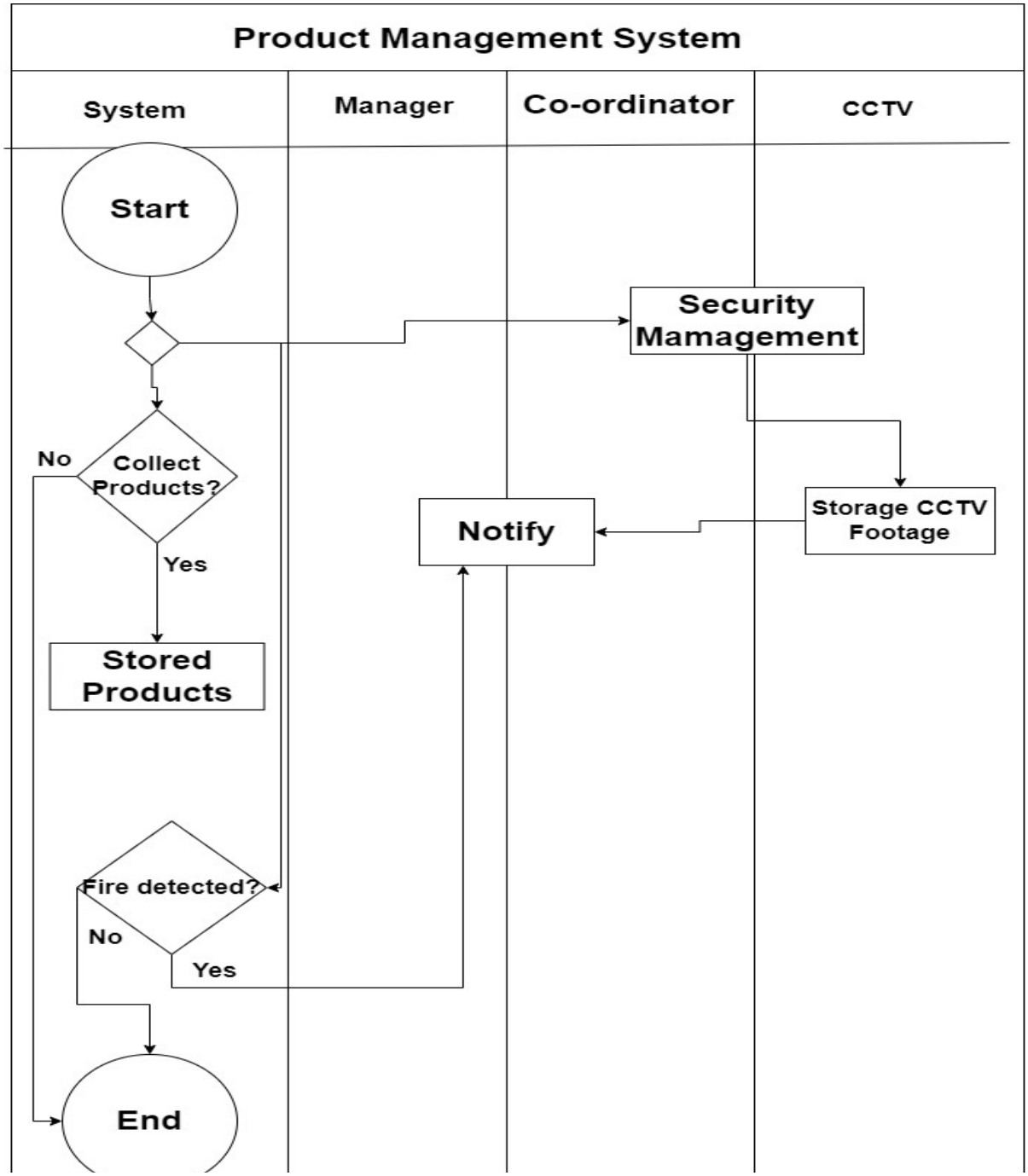


Fig-38:Storage Management System

Data Modeling

List of Nouns:

Serial no	Name	P/S	Attributes
1	Outlet	S	5,10,11,12,13,14,15,16,17,163
2	Aalam Nari Uddokta Songstha'	P	
3	Joyita foundation	P	
4	Dhanmondi 27, Dhaka	P	
5	Traditional products	S	10,11,12,13,14,15,16
6	Traditional cottage industry	P	
7	Tontuj	P	
8	Bain-Textile	P	
9	Rangamati	P	
10	Clothes (Pinon-khadi)	S	
11	Lungi	S	
12	T-shirts	S	
13	One or two pieces dress	S	
14	Fabrics	S	
15	Show pieces	S	
16	Ornaments	S	
17	Employees	S	22,23,26,33,161,40,91,95,97,112, 131,132,133,134
18	Head of the outlet	S	33,131
19	Manager	S	33,20,32,131

20	Account manager	S	
21	Co-ordinator	S	33,131
22	Head of the industry	S	
23	Weavers	S	131
24	Designer	S	34,68,70,71,131,161
25	Collector	S	5,34,36
26	Tailors	S	
27	Customers	S	137,138,139,140
28	Type and design	S	
29	Accounting work	S	
30	Cashier-1	S	
31	Cashier-2	S	
32	Industry manager	S	
33	Meeting	S	
34	Design	S	
35	Implementation	S	
36	Industry storage	S	5,43,162
37	Accounting system	S	29,38,54,55,56,58,59,63,64,65,66
38	Transaction	S	
39	Transportation	S	`140
40	Order picker	S	
41	Order fulfillment	S	
42	Security services	S	43,44,45,46,48,109,116
43	CCTV cameras	S	
44	Video footage	S	
45	Recordings	S	

46	Fire alarm	S	
47	Notification	S	
48	Smoke detection	S	
49	Real-time tracking	S	
50	Vehicles	P	
51	Shipments	S	
52	Logistics	S	
53	Wholesale purchase	P	
54	Quantity	S	
55	Price	S	
56	Income	S	
57	SMS	S	
58	Profit	S	
59	Due amount	S	
60	Reminder	P	
61	Overtime	P	
62	Deduction	P	
63	Bonus	S	
64	Sell history	S	
65	Cost	S	
66	loss	S	
67	Date range	P	
68	3D design model	S	
69	Model named 'alam'	P	
70	Color	S	
71	Texture	S	

72	Workers	S	
73	Request	S	
74	Call	S	
75	Information	P	
76	Date	P	
77	Time	S	
78	Choice	S	
79	Demand	S	
80	Discount	S	
81	Packaging	S	
82	Tagging	S	
83	Showroom	S	
84	Registration system	S	85,86,87,88,89,92,93,94
85	Authentication	S	
86	Sign-in	S	
87	Name	S	
88	Email	S	57
89	Phone number	S	
90	Address	P	
91	Job position	S	
92	Password	S	
93	Recovery	S	
94	Account creation and deletion	S	
95	Attendance	S	
97	Working hours	S	

98	Leaves	P	
99	Order management system	S	40,41,100,
100	Order template	S	
101	Ready-made products	S	
102	Customized products	S	
103	Payment	S	104,105,106,158
104	Bkash	S	
105	Nagad	S	
106	Rocket	S	
107	Attention	P	
108	Store products	P	
109	Security camera	S	
110	Access	S	
111	System	S	47,57,159,88
112	Employee's salary	S	
113	Nouns	P	
114	Text	P	
115	Owner	S	
116	Security	S	
117	Security recording	P	
118	Size	P	
119	Date	P	
120	Information	P	
131	Employee ID	S	
132	Full name	S	
133	NID number	S	

134	Photo	S	
135	Permanent address	P	
136	Current address	P	
137	Customer Information	S	
138	Customer full names	S	
139	Phone numbers	S	
140	Delivery addresses	S	
141	Dealer Information	P	
142	Dealer's name	P	
143	Company name	S	
154	Product name	S	
155	Inventory Produced goods	P	
156	Incoming stock	P	
157	Total	P	
158	Bill	S	
159	Database	S	
160	cashier	S	
161	Industry designer	S	
162	Order picker	S	
163	outlet_Name	S	

List of Objects:

1.Outlet

Attributes: Outlet_name,Traditional products, Clothes (Pinon-khadi), Lungi, T-shirts, One or two piece dress, Fabrics, Show pieces, Ornaments, Employees**.**

2.Employees

Attributes: Employee_id,Order picker, Job position, Attendance, Working hours, Employee's salary, Employee ID, Full name, NID number, Photo, Tailors.

3.Manager

Attributes: Employee_id,Account Manager, Industry manager, Meeting, outlet manager

4.Designer

Attributes: Employee_id,design, 3D design model, Color, Texture, fabrics

5.Collector

Attributes: Traditional Products, design, Industry storage,Employee_id

6.Customers

Attributes: Customer Information, Customer full names, Phone numbers, Delivery addresses,cusatomer_id

7.Industry Storage

Attributes: Traditional Products, CCTV cameras, Order picker

8.Accounting

Attributes: Accounting_work, Transaction, Quantity, Price, Income, Profit, Due amount, Bonus, Sell history, Cost, loss

9.Registration

Attributes: Sign-in, Name, Email, Phone number, Password, Recovery, Account creation and deletion

10.Email

Attributes: sms

11.Order Management

Attributes: Order picker, Order fulfillment, Order template, Ready-made products, Customized product

12.System

Attributes: Notification, SMS, Email, Database

13.Head of Outlet

Attributes: Meeting,Employee_id

14.Security Service

Attributes: CCTV cameras, Video footage, Recordings, Fire alarm, Smoke detection, Security camera, Security

15.Transportation

Attributes: Delivery address

16. Payment

Attributes: Bkash, Nagad, Rocket, Bill

17. Coordinator
Attributes: Meeting,Employee_id

18. Traditional Products
Attributes: clothes, Lungi, T-shirts, one or two piece dress, ornaments, showpieces, Fabrics.

Analysis

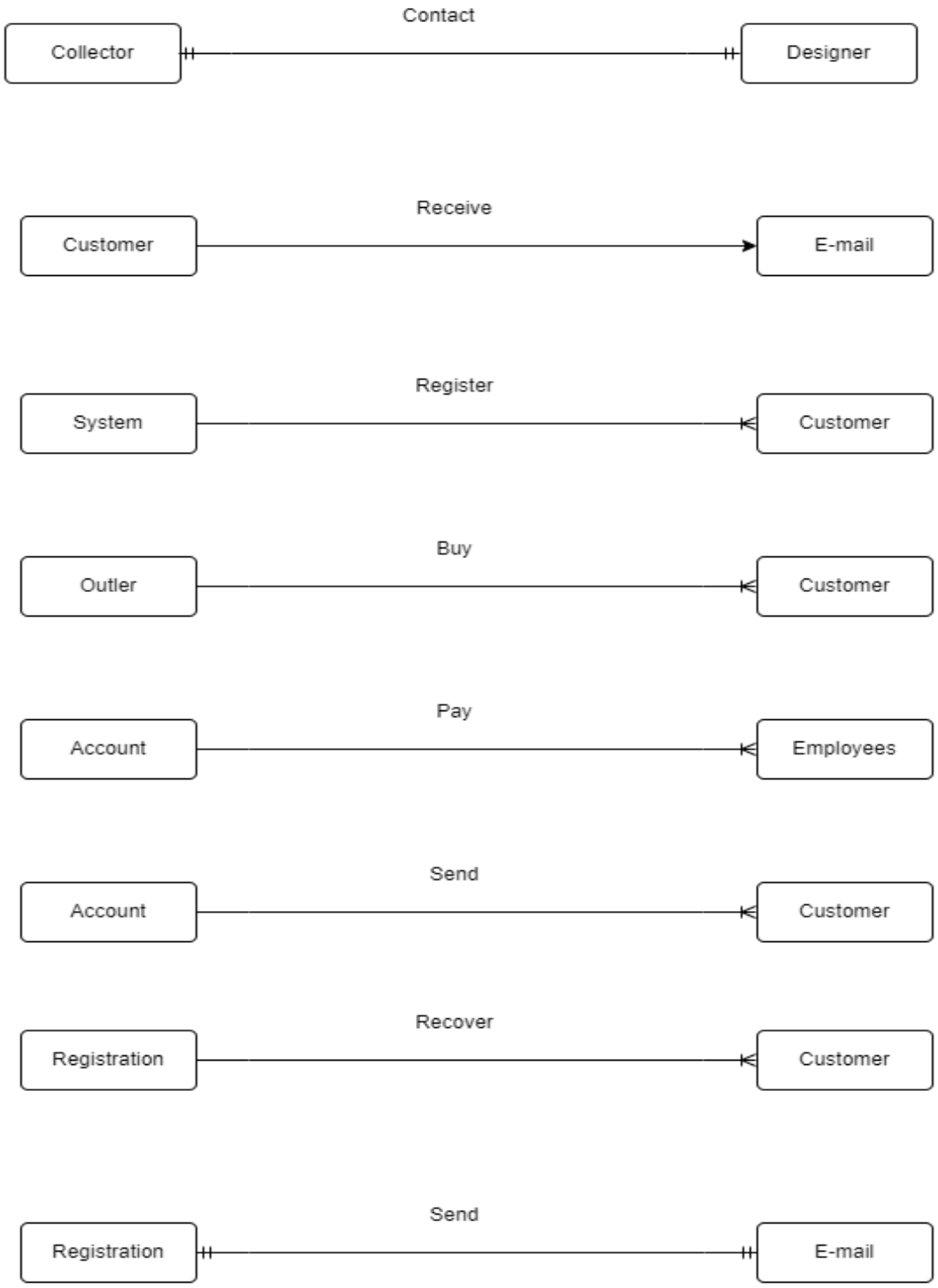
Before proceeding to finalize class cards, we need to analyze our list of objects based on their attributes and methods. Depending on their attributes & operations we may need to remove objects and make a superclass / abstract class or interface. And this discussion is now delineated as follows:

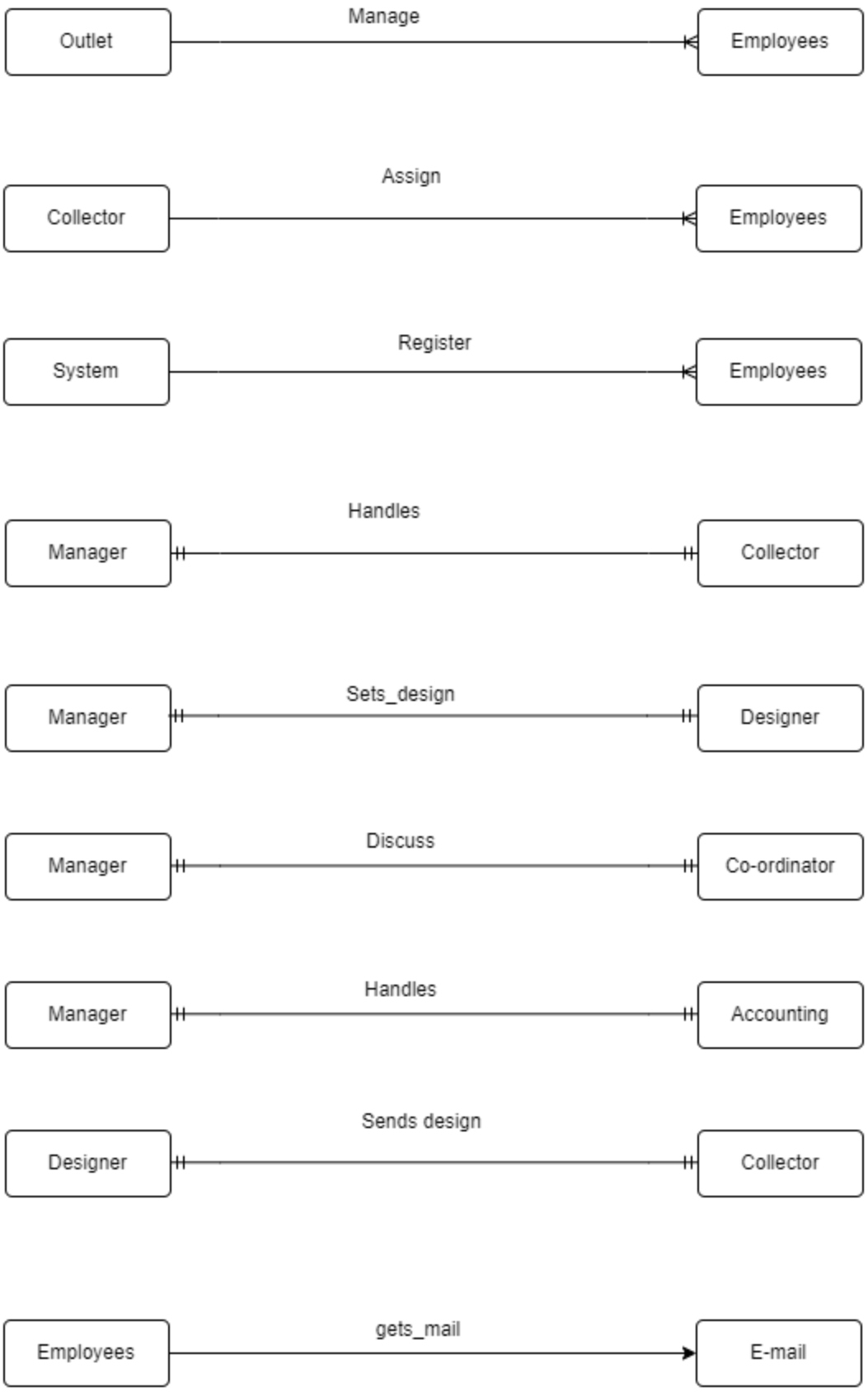
➢ We can merge **Employees** and **coordinator** classes as they share almost similar attributes and methods.

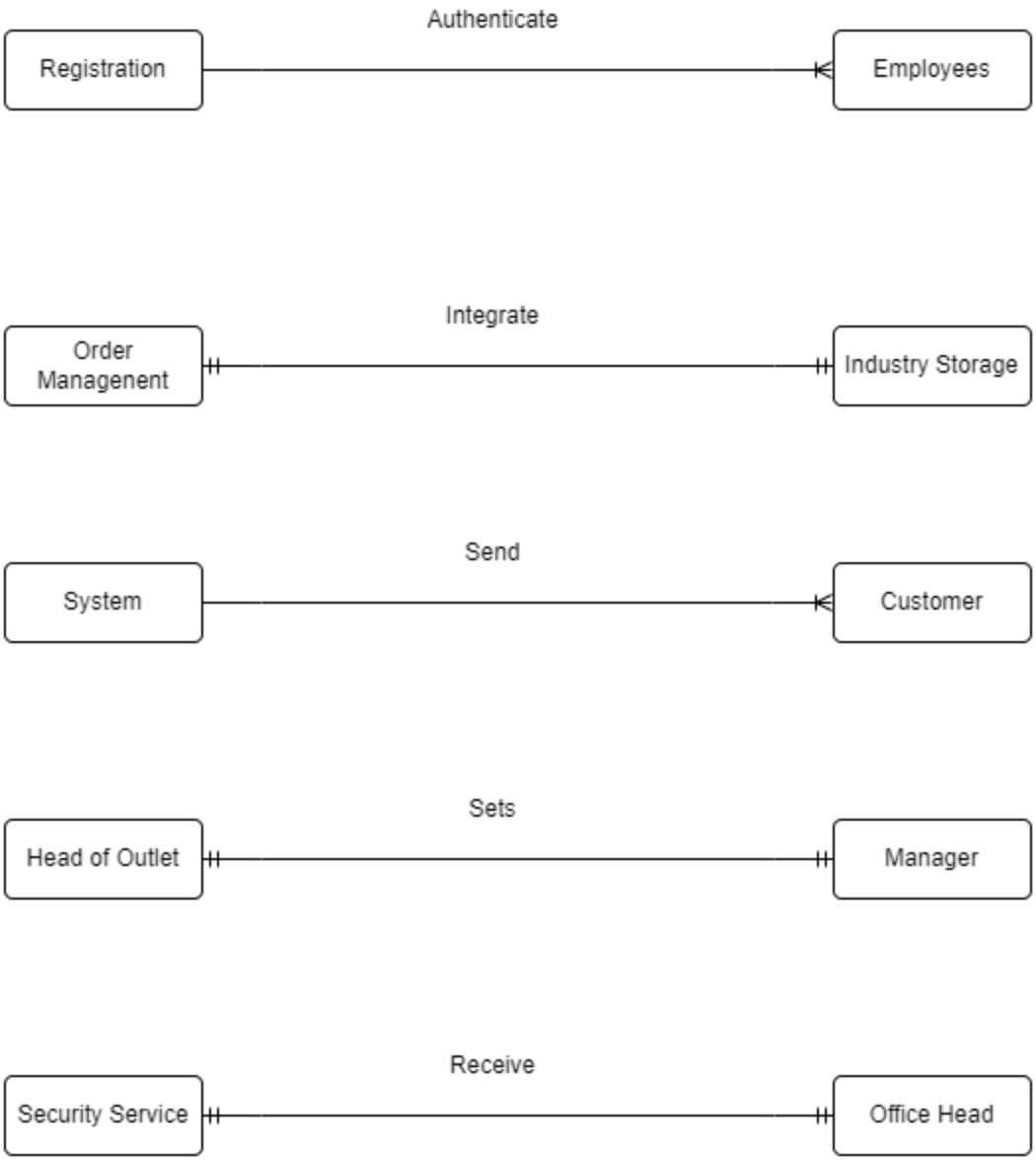
➢ We can merge **Accounting** and **Payment** classes as they share almost similar attributes and methods.

➢ We can merge **Order management** and **Transportation** classes as they share almost similar attributes and methods.

Relational Schema:




Outlet
Manage
Employees
Collector
Assign
Employees
System
Register
Employees
Manager
Handles
Collector
Manager
Sets_design
Designer
Manager
Discuss
Co-ordinator
Manager
Handles
Accounting
Designer
Sends design
Collector
Employees
gets_mail
E-mail


Authenticate
Registration
Employees
Integrate
Order Managenent
Industry Storage
Send
System
Customer
Sets
Head of Outlet
Manager
Receive
Security Service
Office Head

ER diagram:

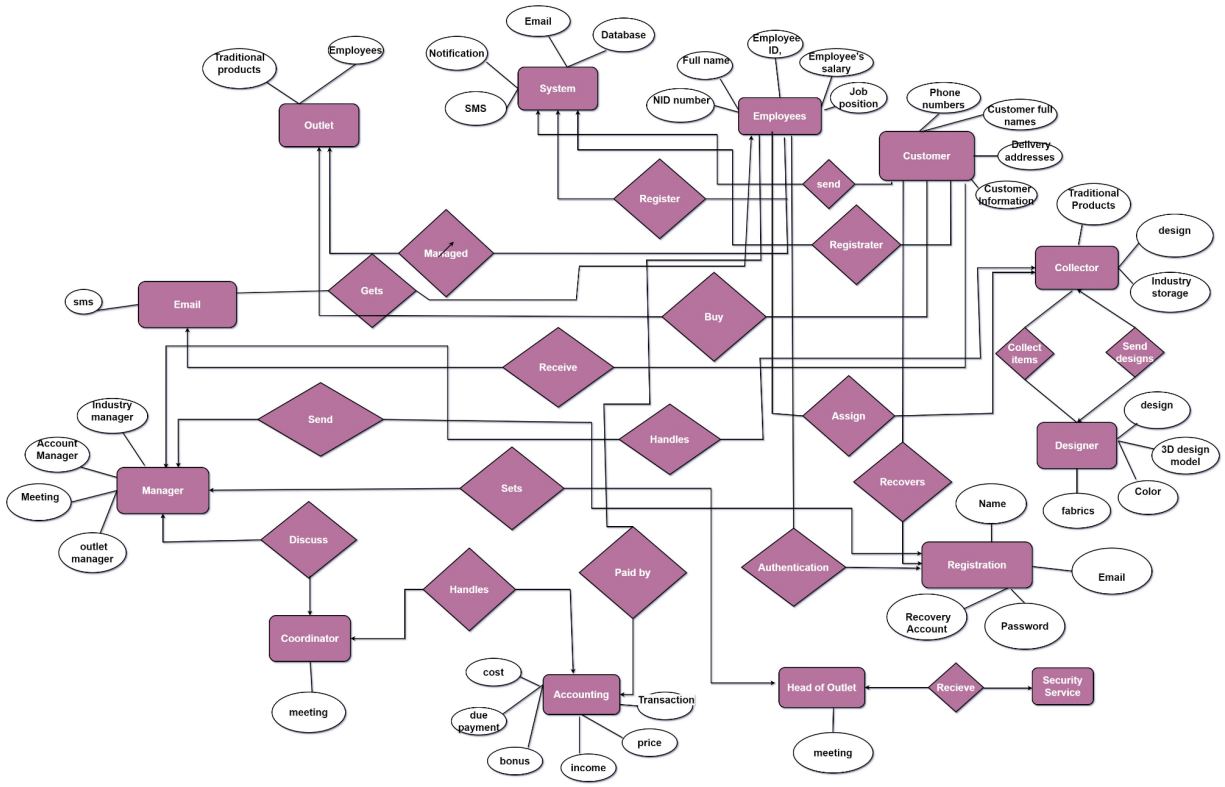


Fig-39:ER Diagram

Schema of ER diagram:

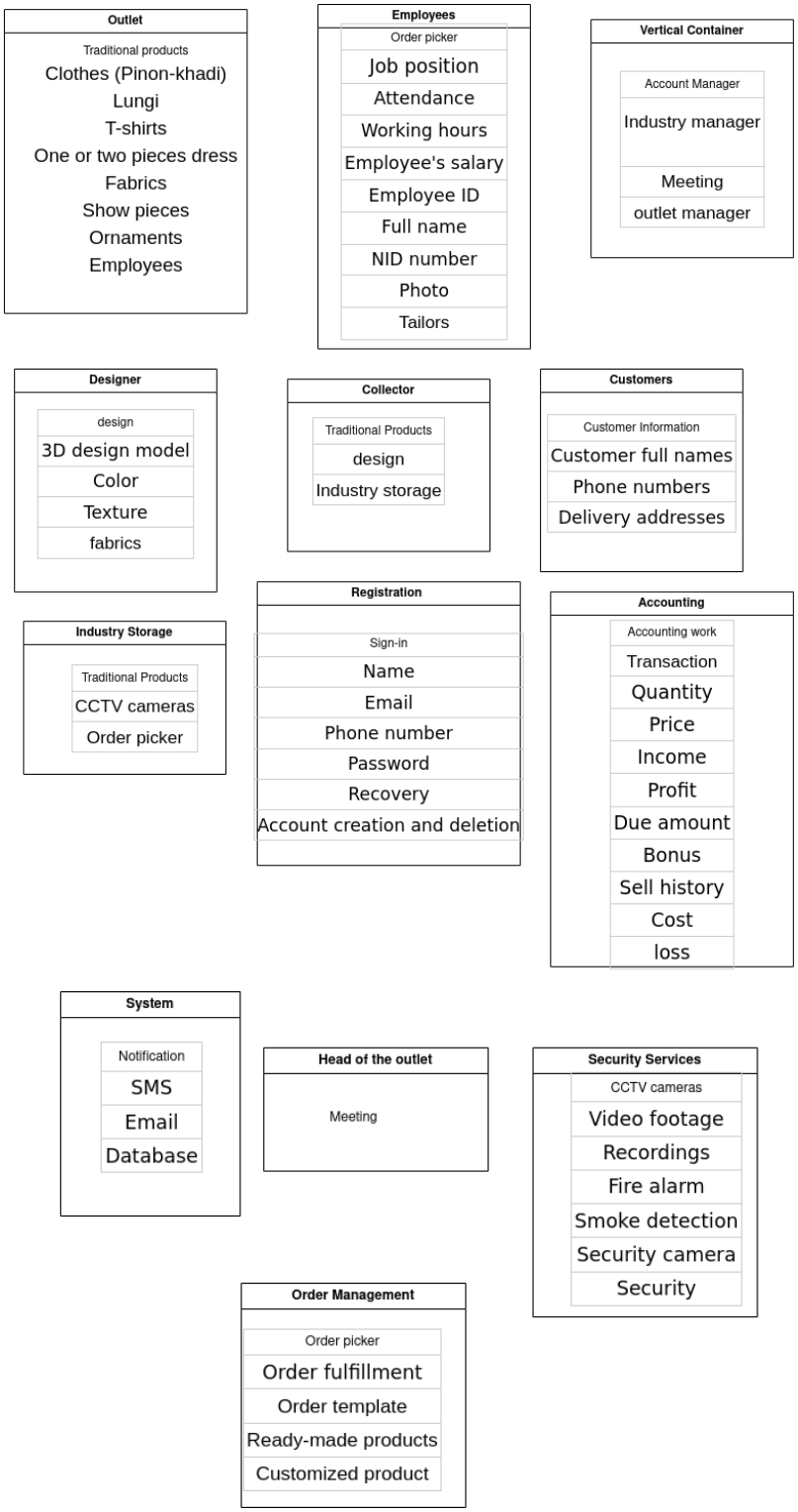


Fig-40:Schema of ER Diagram

Class-Based Modeling

Class-based modeling defines the structure of the entire system by identifying the static structure of objects in that system. A class model defines attributes and operations for the objects of each class and also the relationship between the objects, and the collaborations that occur between the classes of the systems. The elements of a class-based model include classes and objects, attributes, operations, class-responsibility-collaborator (CRC) models, collaboration diagrams, and packages.

Verb List:

1	exists
2	located
3	sells
4	Managed
5	connected
6	make
7	confirm
8	let
9	finalize
10	send
11	assign
12	implement
13	store

14	manage
15	handle
16	discuss
17	select
18	produce
19	create
20	delete
21	register
22	enter
23	recover
24	sign-in
25	store
26	monitor
27	record
28	receive
29	deduct
30	take
31	work
32	provide
33	use
34	keep
35	prevent
36	notify
37	delete
38	keep
39	wish
40	be

41	have
42	do
43	pay
44	calculate
45	decide
46	update
47	fix
48	tell
49	input
50	see
51	know
52	give
53	understand
54	inform
55	add
56	remove
57	bye
58	forget
59	can
60	Ensure
61	Authenticate
62	consists
63	separates
64	receive
65	Integrates

General Classification:

In this section we'll include those classes that are in the solution space. These candidate classes are categorized based on the seven general classifications. The analysis classes manifest themselves in one of the following ways:

1. External entities
2. Things
3. Events
4. Roles
5. Organizational units
6. Places
7. Structures

A candidate class is selected for special classification if it fulfills three or more Characteristics.

SL	Name	General Classification
1	Outlet	1,5,6
2	Alaam Nari Uddokta songstha'	6
3	Joyita foundation	6
4	Dhanmondi 27, Dhaka	6
5	Traditional products	2,3,5

6	Traditional cottage industry	6,5
7	Tontuj	
8	Bain-Textile	
9	Rangamati	
10	Clothes (Pinon-khadi)	2,7
11	Lungi	2,7
12	T-shirts	2,7
13	One or two pieces dress	2,7
14	Fabrics	2,7
15	Show pieces	2,7
16	Ornaments	2,7
17	Employees	1, 3,4,5,7
18	Head of the outlet	4,5
19	Manager	3,4,5,7
20	Account manager	3,4,5,7
21	Co-ordinator	3,4,5
22	Head of the industry	4,5
23	Weavers	4,5
24	Designer	3,4,5
25	Collector	3,4,5
26	Tailors	4,5
27	Customers	1,3,4,5

28	Type	2,7
29	Accounting work	2,7
30	Cashier-1	4,5
31	Cashier-2	4,5
32	Industry manager	3,4,5,7
33	Meeting	1
34	Design	2,7
35	Implementation	
36	Industry storage	1,5,6,7
37	Accounting system	1,5,7
38	Transaction	2
39	Transportation	1,2,5
40	Order picker	4,5
41	Order fulfillment	
42	Security services	1,5
43	CCTV cameras	1,5,7
44	Video footage	2
45	Recordings	2
46	Fire alarm	2
47	Notification	2
48	Smoke detection	2
49	Real-time tracking	2
50	Vehicles	

51	Shipments	
52	Logistics	
53	Wholesale purchase	
54	Quantity	2
55	Price	2
56	Income	2
57	SMS	1,4,5
58	Profit	2
59	Due amount	2
60	Reminder	
61	Overtime	
62	Deduction	
63	Bonus	2
64	Sell history	2
65	Cost	2
66	loss	2
67	Date range	
68	3D design model	
69	Model named 'alam'	6
70	Color	
71	Texture	
72	Workers	4,5
73	Request	

74	Call	1,2
75	Information	2
76	Date	
77	Time	
78	Choice	3
79	Demand	3
80	Discount	
81	Packaging	3,5
82	Tagging	3,5
83	Showroom	4
84	Registration system	1,3,4
85	Authentication	1,3,4
86	Sign-in	3
87	Name	3
88	Email	1,3,4
89	Phone number	1
90	Address	3
91	Job position	3
92	Password	3
93	Recovery	
94	Account creation and deletion	3
95	Attendance	3

96	Working hours	
97	Leaves	
98	Order management system	1,3,4,5
99	Order template	3
100	Ready-made products	4
101	Customized products	4
102	Payment	2
103	Bkash	1,2
104	Nagad	1,2
105	Rocket	1,2
106	Attention	
107	Store products	5
108	Security camera	1,7
109	Access	
110	System	1,2,4,5
111	Employee's salary	
112	Nouns	
113	Text	
114	Owner	1,2,4,5
115	Security	1,7
116	Security recording	7
117	Size	

118	Date	
119	Information	2
120	Employee ID	2
131	Full name	2
132	NID number	2
133	Photo	2
134	Permanent address	2
135	Current address	2
136	Customer Information	2
137	Customer full names	2
138	Phone numbers	2
139	Delivery addresses	2
140	Coordinator Information	2
141	Customer's name	2
142	Company name	2
143	Product name	2,7
154	Inventory Produced goods	2,7
155	Incoming stock	
156	Delivery date	2
157	Total	
158	Bill	
159	Database	1,5

160	**cashier**	**4,5**
161	**Industry Designer**	**4**
162	**Order picker**	**4**

We can see that we got 20 potential classes for further analysis.

Selection Criteria:

In this section we'll include those classes that are selected in general classification.These candidate classes are then selected as classes by six Selection Criteria. The criterias are

1. Retain information
2. Needed services
3. Multiple attributes
4. Common attributes
5. Common operations
6. Essential requirements

A candidate class generally becomes a class when it fulfills around three characteristics.

SL	General Classification	Selection Criteria
1	Outlet	2,3,4,5,6
2	Employees	1,2,3,4,6
3	Manager	1,2,3,4,6
4	Designer	1,2,3,4,6

5	Collector	1,2,3,4,6
6	Customers	1,2,3,4,6
7	Industry Storage	1,2,3,6
8	Accounting	2,3,4,6
9	Registration	1,2,3,4,6
10	Email	2,3,6
11	Order Management	2,3,4,6
12	System	1,2,3,4,6
13	Head of Outlet	1,2,3,4,6
14	Account Manager	2,3,4
15	SMS	2
16	CCTV	1,2
17	Transportation	2
18	Call	2
19	Security Services	1,2,6
20	Traditional Products	1,2,3,4,6

Final List of Class

After analyzing the list of objects we have merged or altered several classes, the final classes remaining are

SL	Selected Class
1	Outlet
2	Employees
3	Manager
4	Designer
5	Collector
6	Customers
7	Industry Storage
8	Accounting
9	Registration
10	Email
11	Order Management
12	System
13	Head of Outlet
14	Security Service
15	Traditional Products

Class Cards:

Table 1: Class Card for Outlet

Class: Outlet	
Attributes	**Method**
Traditional products Clothes (Pinon-khadi) Lungi T-shirts One or two pieces dress Fabrics Show pieces Ornaments Employees	sells_product() managed_employees() outlet_located() exists_outlet()
Responsibilities	**Collaborator Class**
1.There exists an outlet 'Aalam Nari Uddokta songstha'	
2. 'Joyita' foundation located in Dhanmondi 27	
3. sells traditional products.	Customers
4.Employees are managed by the outlet.	employees

Fig-41:Class Card for Outlet

Table 2: Class Card for employees

Class: Employees	
Attributes	**Methods**
Order picker	get_email()
Job position	sign-in()
Attendance	register_system()
Working hours	enter_information()
Employee's salary	store_infromation()
Employee ID	forget_password()
Full name	sell_product()
NID number	pick_order()
Photo	
Tailors	
Responsibilities	**Collaborator class**
1. get an email	Email
2. they can sign-in into the website.	
3. can register into the system	System
4.entering their information	System
5.can also store their sign-in details.	
6.forget their password	Email
7.sell product to customers	customers
8.pick order from storage	Industry storage

Fig-42:Class Card for Employees

Table 3: Class Card for Manager

Manager	
Attributes	**Methods**
Account Manager	sets_meeting()
Industry manager	handles_employees()
Meeting	ensure_type()
outlet manager	discuss()
Responsibilities	**Collaborator Class**
1.outlet manager discusses with coordinator	coordinator
2.ensure the type and design	
3.outlet manager handles the collector	collector
4.Industry manager sets a meeting	coordinator
5.Industry manager sets a meeting	designer
6. the account manager handles	accounting, collector

Fig-43:Class Card for Manager

Table 4: Class Card for Designer

Designer	
Attributes	**Methods**
design	finalize_design()
3D design model	send_design()
Color	prepare_design()
Texture	
fabrics	
Responsibilities	**Collaborator class**

1.industry designer finalizes their design	
2.sends the design to the collector.	collector
3.prepares a design for the fabrics	

Fig-44:Class Card for Designer

Table 5: Class Card for Collector

Collector	
Attributes	**Methods**
Traditional Products	collects_design()
design	assigns_design()
Industry storage	separate_products()
Responsibilities	**Collaborator class**
1.collects the design from the designer	designer
2.assigns the designs to the weavers	employees
3.separates fabric, already-made products.	

Fig-45:Class Card for Collector

Table 6: Class Card for Customers

Customers	
Attributes	**Methods**
Customer Information	forget_password()
Customer full names	register()
Phone numbers	buy_products()
Delivery addresses	recover_password()
Responsibilities	**Collaborator Class**

1. register into the system	system
2.forget their password	
3. recover it using their email	Email
4. buy their products	outlet

Fig-46:Class Card for Customers

Table 7: Class Card for Industry Storage

Industry Storage	
Attributes	**Methods**
Traditional Products	integrates_order_fulfillment()
CCTV cameras	consist_two_types_products()
Order picker	
Responsibility	**Collaborator class**
1. efficiently integrates with order fulfillment	Order Management
2.consist of two types of products	

Fig-47:Class Card for industry Storage

Table 8: Class Card for Registration

Registration	
Attributes	**Method**

Sign-in	authenticate_valid_user()
Name	
Email	sent_mail()
Phone number	
Password	recover_password()
Recovery	
Account creation and deletion	
Responsibilities	**Collaborator class**
1. This system authenticate the valid user	Employees
3. Recover password using their email address..	Customers
5.They can recover passwords through mail.	Email

Fig-48:Class Card for Registration

Table 9: Class Card for Email.

Email	
Attributes	**Method**
sms	sent_mail()
Responsibilities	**Collaborator class**
1. Send password recovery sms or mail	Employees

Fig-49:Class Card for Email

Table 10: Class Card for Accounting

Accounting	
Attributes	**Methods**
Accounting work	
Transaction	keep_track()
Quantity	sent_customer()
Price	calculate_sales_record()
Income	pay_salary()
Profit	maximize_profit()
Due amount	sold_product()
Bonus	
Sell history	
Cost	
loss	
Responsibilities	**Collaborator class**
1.keep track of the wholesale purchase	
2. information is also sent to the customers	customers
3.sales record will be calculated automatically.	
4.pay the salary of the employees	employees
5.maximize the profit of the shop	
6.which product is sold the most/least	

Fig-50:Class Card for Accounting

Table 11: Class Card for System

System	
Attributes	**Methods**
Notification	sent_mail()
SMS	store_transactions()
Email	verify_payment()
Database	
Responsibilities	**Collaborator class**
1. system will store all transactions	
2. confirmation email will send to the customer	customer
3.verify the payment successfully received.	

Fig-51:Class Card for System

Table 12: Class Card for Head of Outlet.

Head of the outlet	
Attributes	**Method**
Meeting	set_meeting()
Responsibilities	**Collaborator class**
The Industry manager sets a meeting with the coordinator and industry designer.	Manager

Fig-52:Class Card for Head of Outlet

Table 13: Class Card for Security Services

Security Services	
Attributes	**Methods**
CCTV cameras	contain_security_recording()
Video footage	monitor_storage()
Recordings	receive_notification()
Fire alarm	detects_smoking()
Smoke detection	
Security camera	
Security	
Responsibilities	**Collaborator class**
1.contain the security recording	
2.monitor the store	industry storage
3.outlet head will receive a notification	outlet head
4.CCTV camera detects any smoking	

Fig-53:Class Card for Security Service

Table 14: Class Card for Order Management.

Order Management	
Attributes	**Method**
Order picker	sent_mail()
Order fulfillment	Integrates_order_fullfilment()
Order template	select_products()
Ready-made products	pay_bill()
Customized product	
Responsibilities	**Collaborator class**
1.a confirmation email will be send to the customer	Customer
2.Storage management system efficiently integrates with order fulfillment	Industry Storage
3.Select ready-made or customized product	
4. Pay with cash on delivery or digital method.	

Fig-54:Class Card for Order Management

Table 15: Class Card for Traditional Products

Traditional Products	
Attributes	**Methods**
cloths	consists()
Lungi	
T-shirt	
Fabrics	
One or Two piece dress	
Ornaments	
Show pieces	
Responsibilities	**Collaborator Class**
1. product consists	Outlet

Fig-55:Class Card for Traditional Products

Class Responsibility Collaboration Modeling:

ID: 1

Name: Outlet

Fig-55:CRC Model -1

ID: 2

Name: Employees

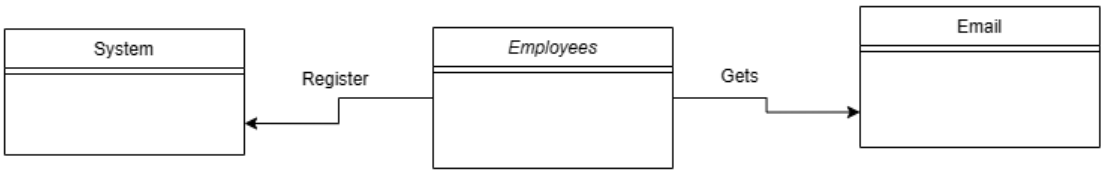


Fig-56:CRC Model -2

ID: 3

Name: Manager

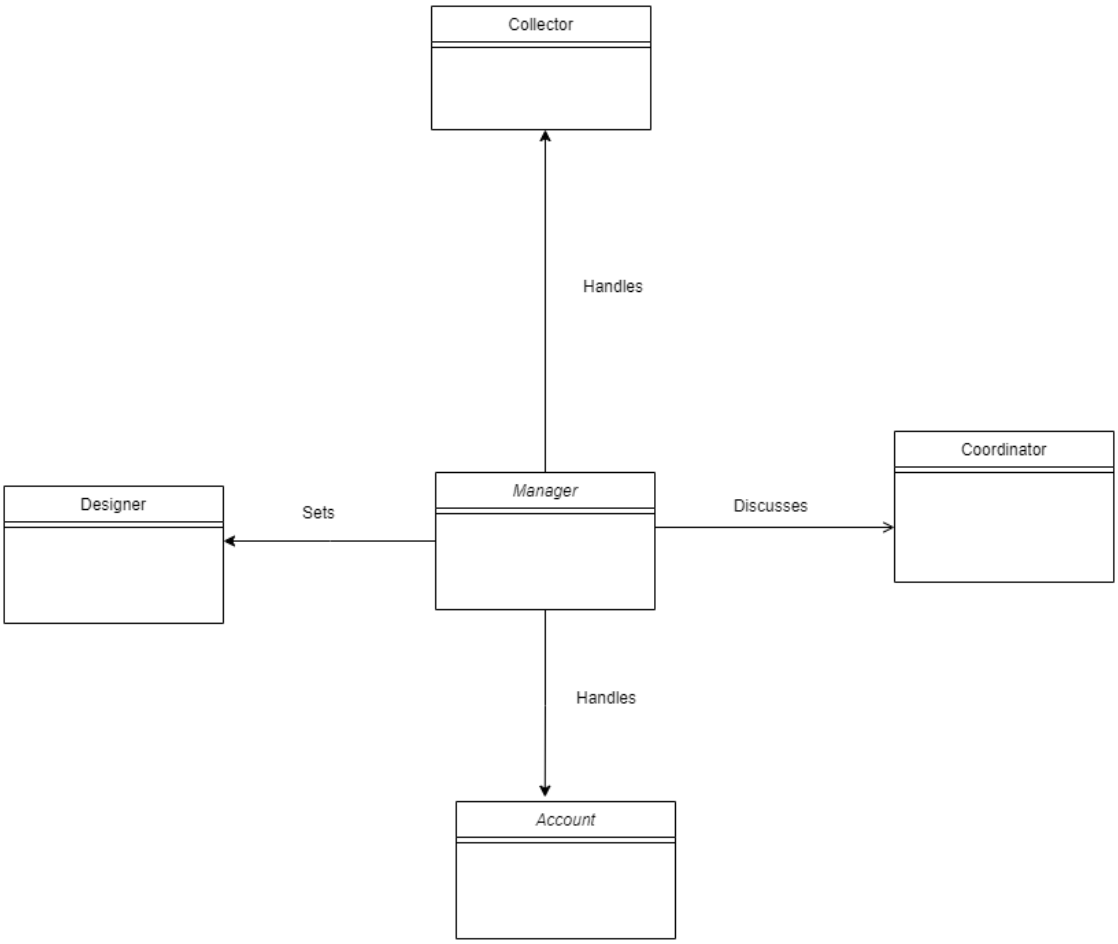


Fig-57:CRC Model -3

ID: 4

Name: Designer

Fig-57:CRC Model -4

ID: 5

Name: Collector

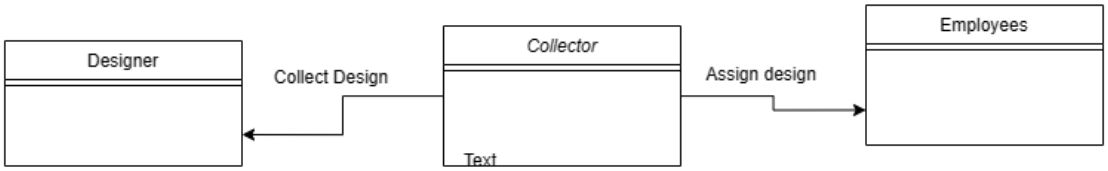


Fig-58:CRC Model -5

ID: 6

Name: Customers

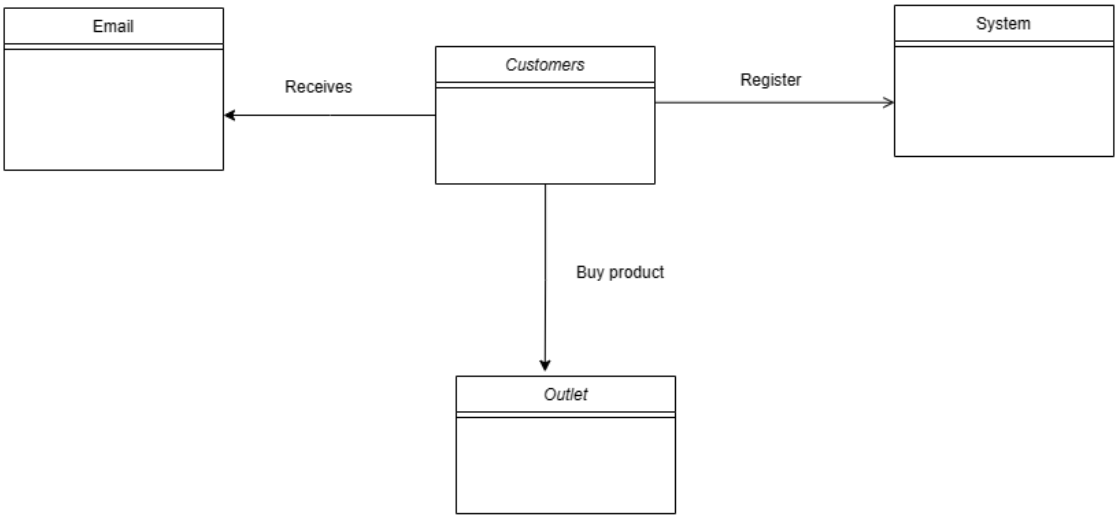


Fig-59:CRC Model -6

ID: 7

Name: Accounting

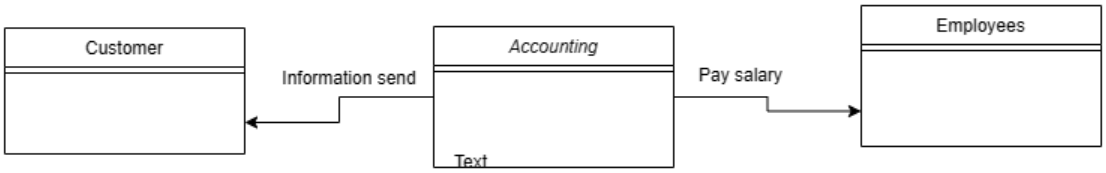


Fig-60:CRC Model -7

ID: 8

Name: Registration

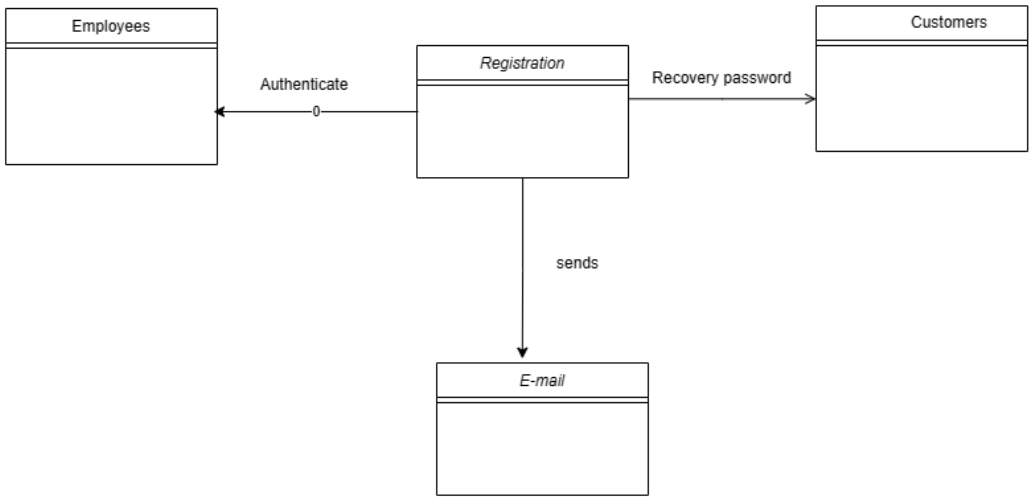


Fig-61:CRC Model -8

ID: 9

Name: Order Management

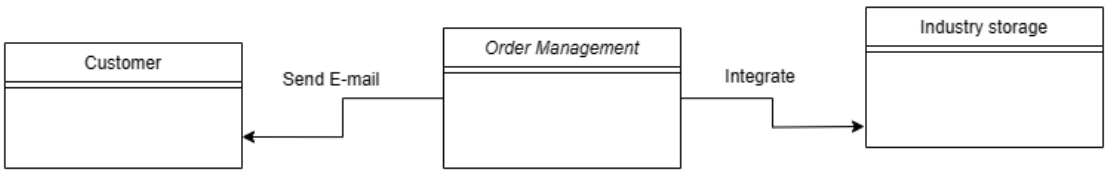


Fig-62:CRC Model -9

ID: 10

Name: System

Fig-63:CRC Model -10

ID: 11

Name: Head of outlet

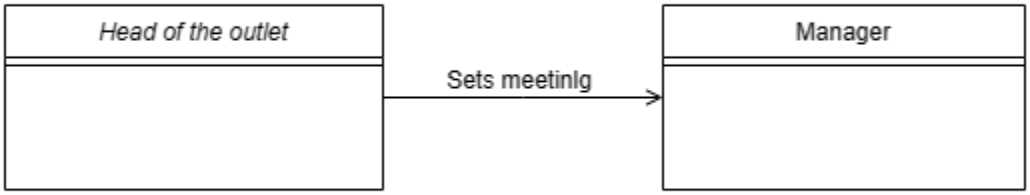


Fig-64:CRC Model -11

ID: 12

Name: Security Services

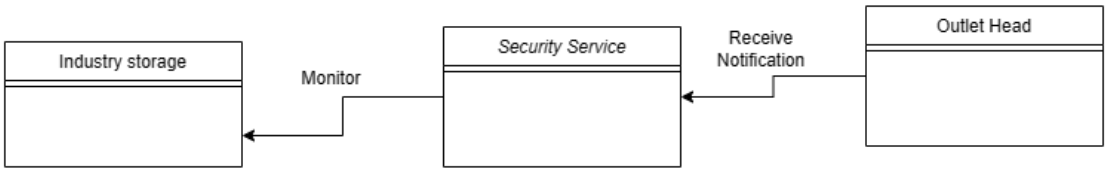


Fig-65:CRC Model -12

ID: 13

Name: Traditional Products

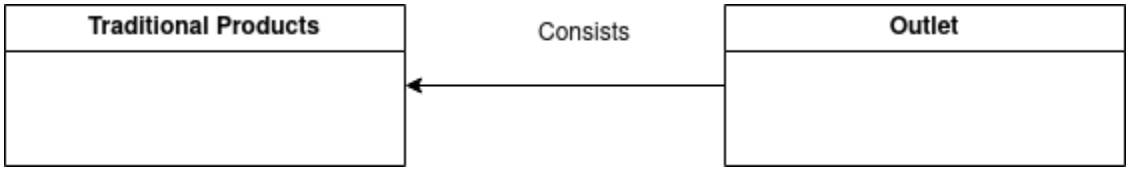


Fig-66:CRC Model -13

Behavioral Modeling:

Initiator	Events	Collaborator
Outlet	Employees are managed by the outlet.	employees
employees	get an email	Email
employees	can register into the system	System

Initiator	Events	Collaborator
employees	entering their information	System
employees	forget their password	Email
Manager	outlet manager discusses with coordinator	Coordinator
Manager	outlet manager handles the collector	Collector
Manager	Industry manager sets a meeting	Coordinator
Manager	Industry manager sets a meeting	Designer
Manager	the account manager handles	Accounting
Designer	sends the design to the collector	Collector
Collector	collects the design from the designer	Designer
Collector	assigns the designs to the weavers	Employees
Customer	recover password using their email	Email
Customers	buy products from outlet	Outlet
Registration	This system authenticate the valid user	Employees
Registration	They can recover passwords through mail.	Email
Industry Storage	efficiently integrates with order fulfillment	Order Management
Email	Send password recovery sms or mail	Employees
Accounting	information is also sent to the customers	Customers
Accounting	pay the salary of the employees	Employees
	confirmation email will send to customers	Customers
Head of Outlet	The Industry manager sets a meeting with the coordinator and industry designer.	Manager
Head of Outlet	The Industry manager sets a meeting with the coordinator and industry designer.	Coordinator
Security Services	monitor the stored products	Industry Storage
Security Services	outlet head will receive a notification	Head of Outlet
Order Management	confirmation email will be send to the customer	Customers

Initiator	Events	Collaborator
Order Management	Storage system efficiently integrates with order fulfillment	Industry Storage
Outlet	Outlet consists products	Products

ID: 1

Name: Registration

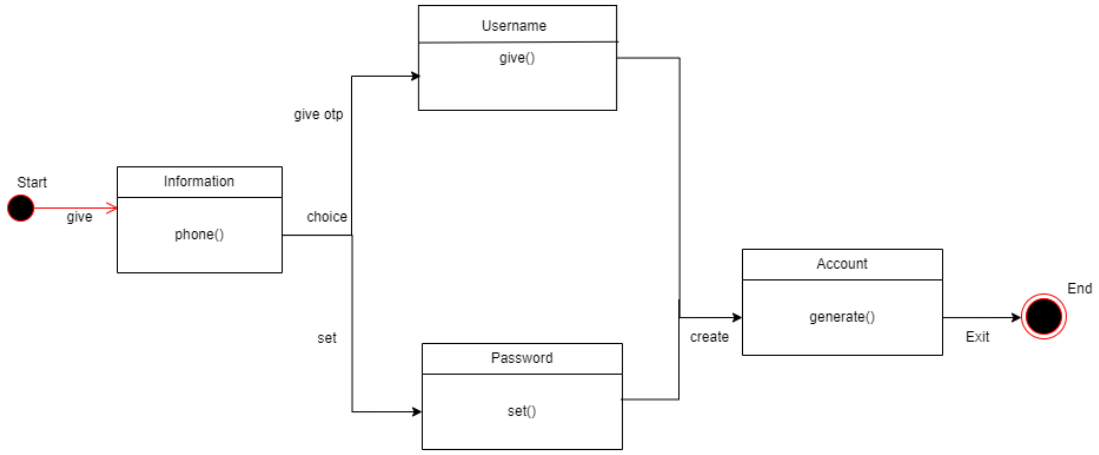


Fig-66:Behavior Model -1

ID: 2

Name: Employees

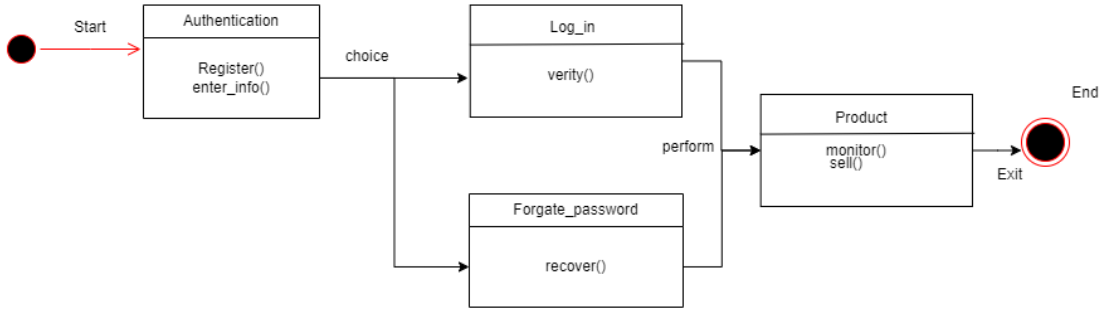


Fig-67:Behavior Model -2

ID: 3

Name: Outlet

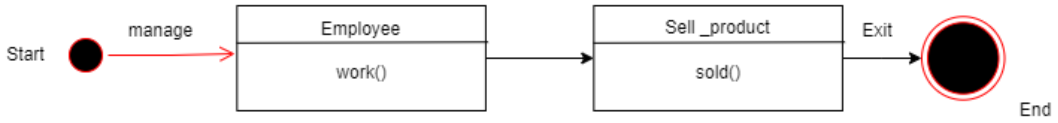


Fig-68:Behavior Model -3

ID: 4

Name:E-mail

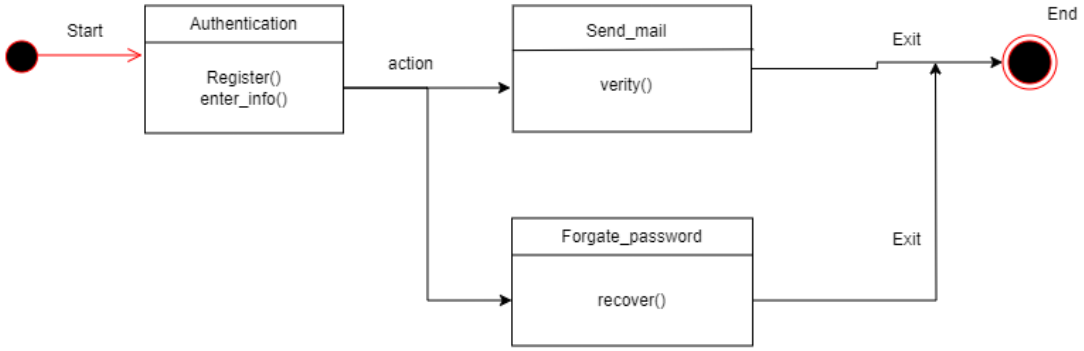


Fig-69:Behavior Model -4

ID: 5

Name: Security Service.

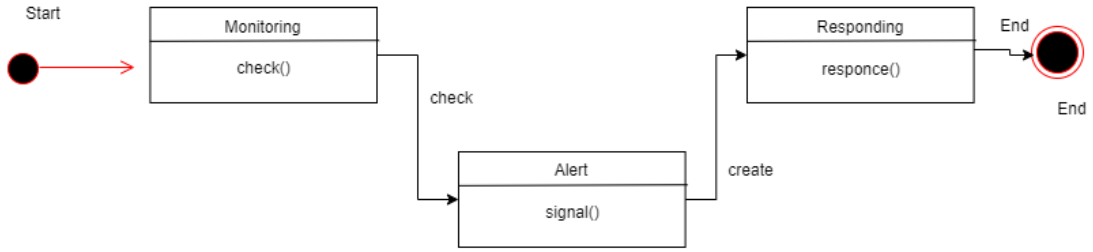


Fig-70:Behavior Model -5

ID: 6

Name: Head of Outlet

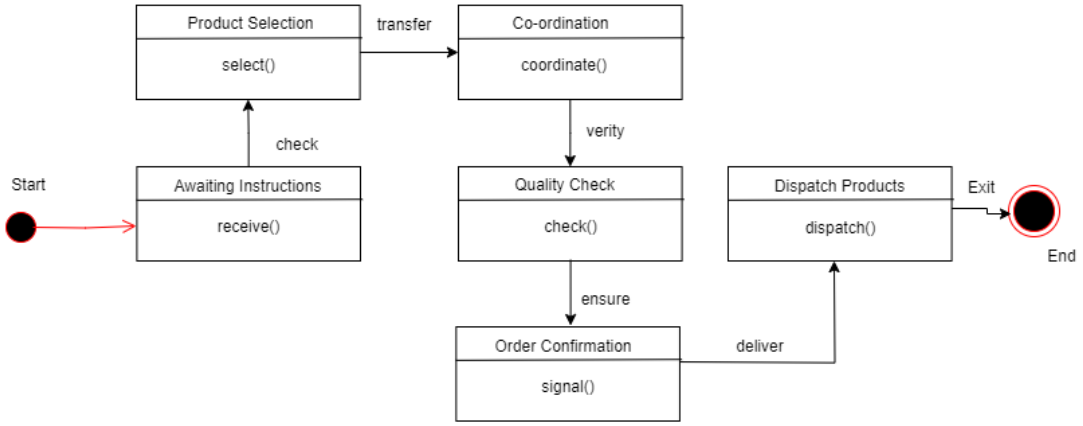


Fig-71:Behavior Model -6

ID: 7

Name: Account

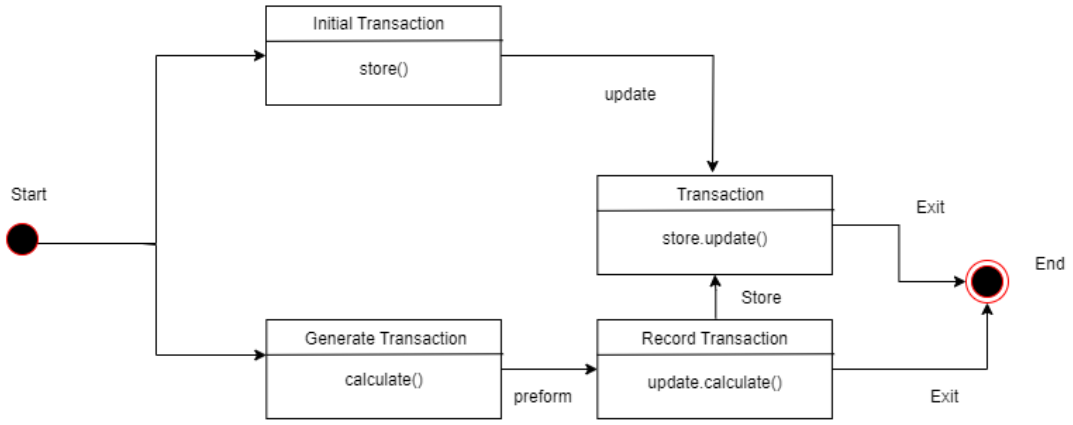


Fig-72:Behavior Model -7

ID: 8

Name: Industrial Storage

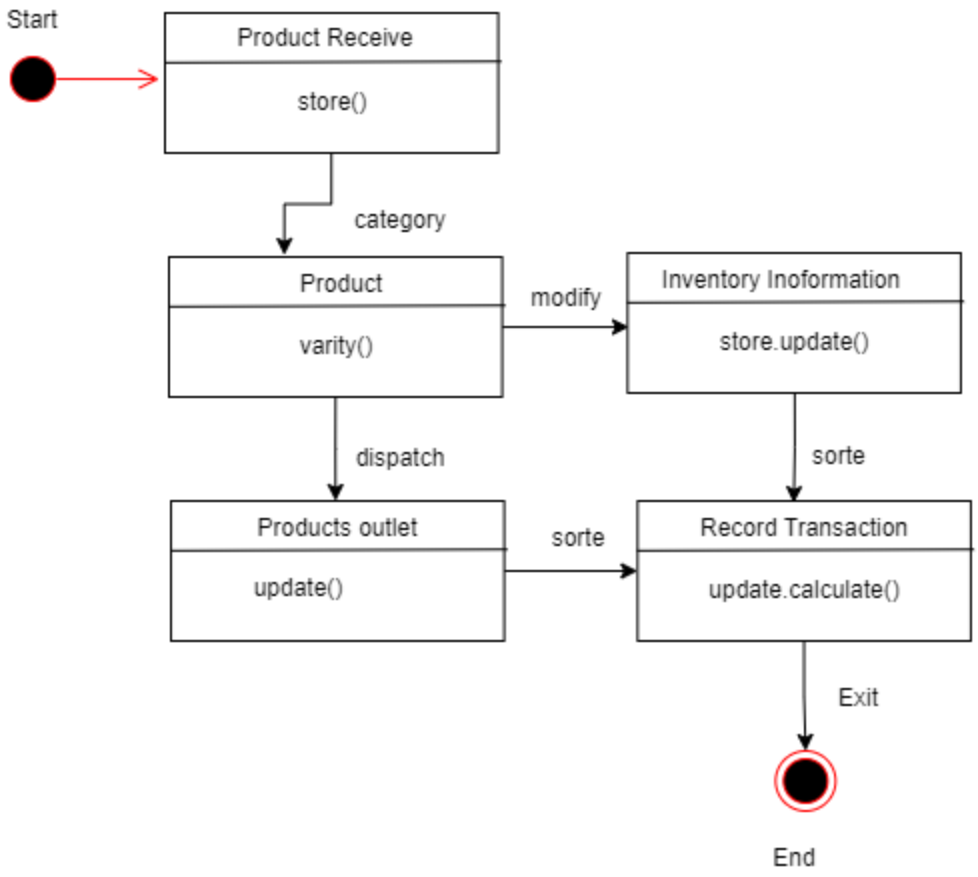
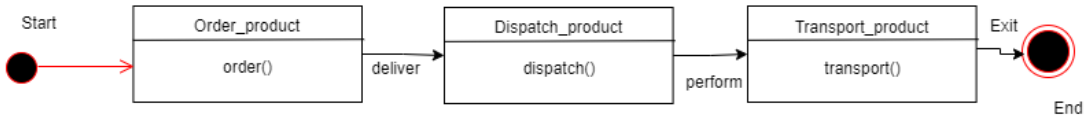


Fig-73:Behavior Model -8

ID: 9

Name: Order Management.



ID: 10

Name: Manager

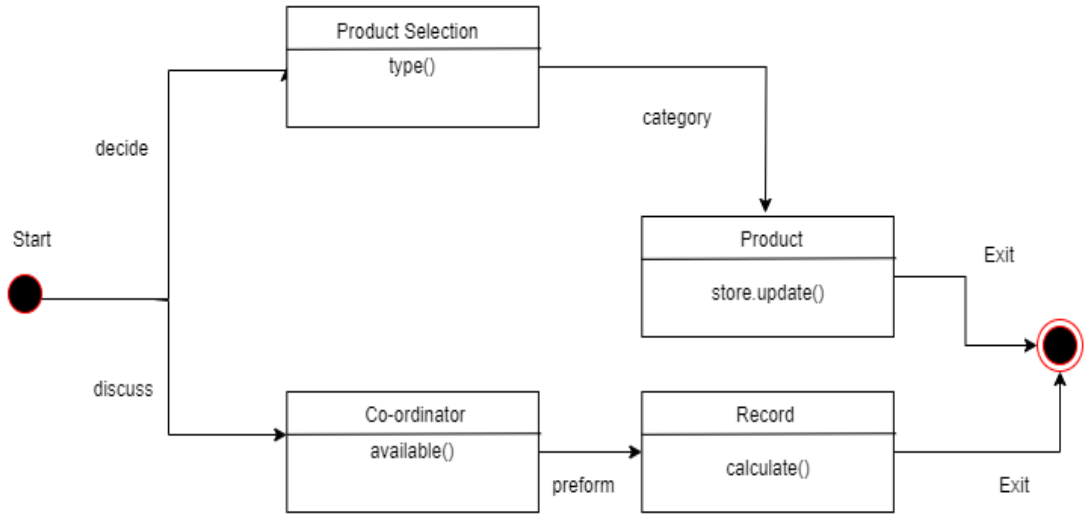


Fig-79:Behavior Model -9

ID: 11

Name: Designer

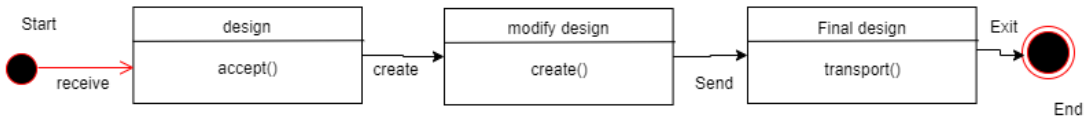


Fig-80:Behavior Model -10

ID: 12

Name: Collector

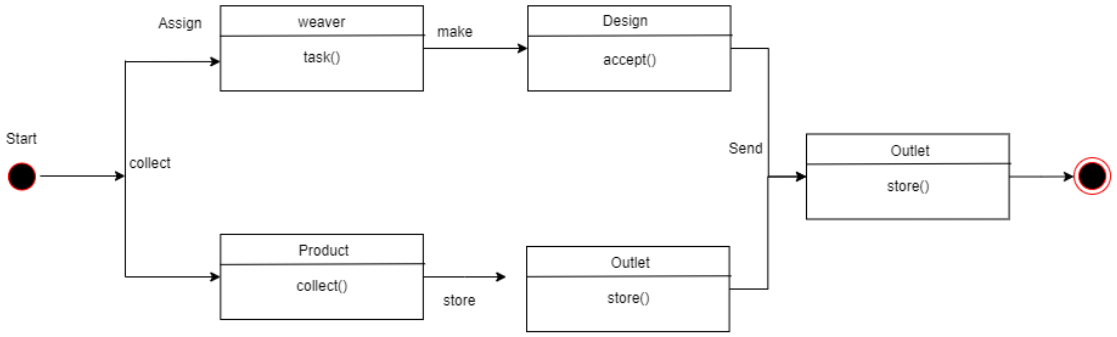


Fig-81:Behavior Model -11

ID: 13

Name: Customer

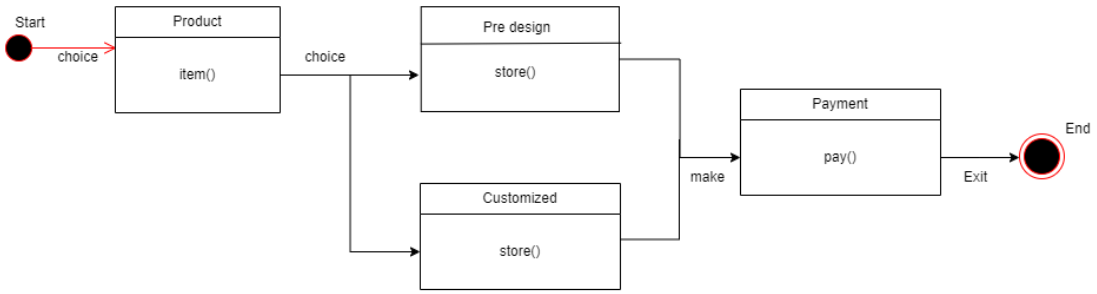
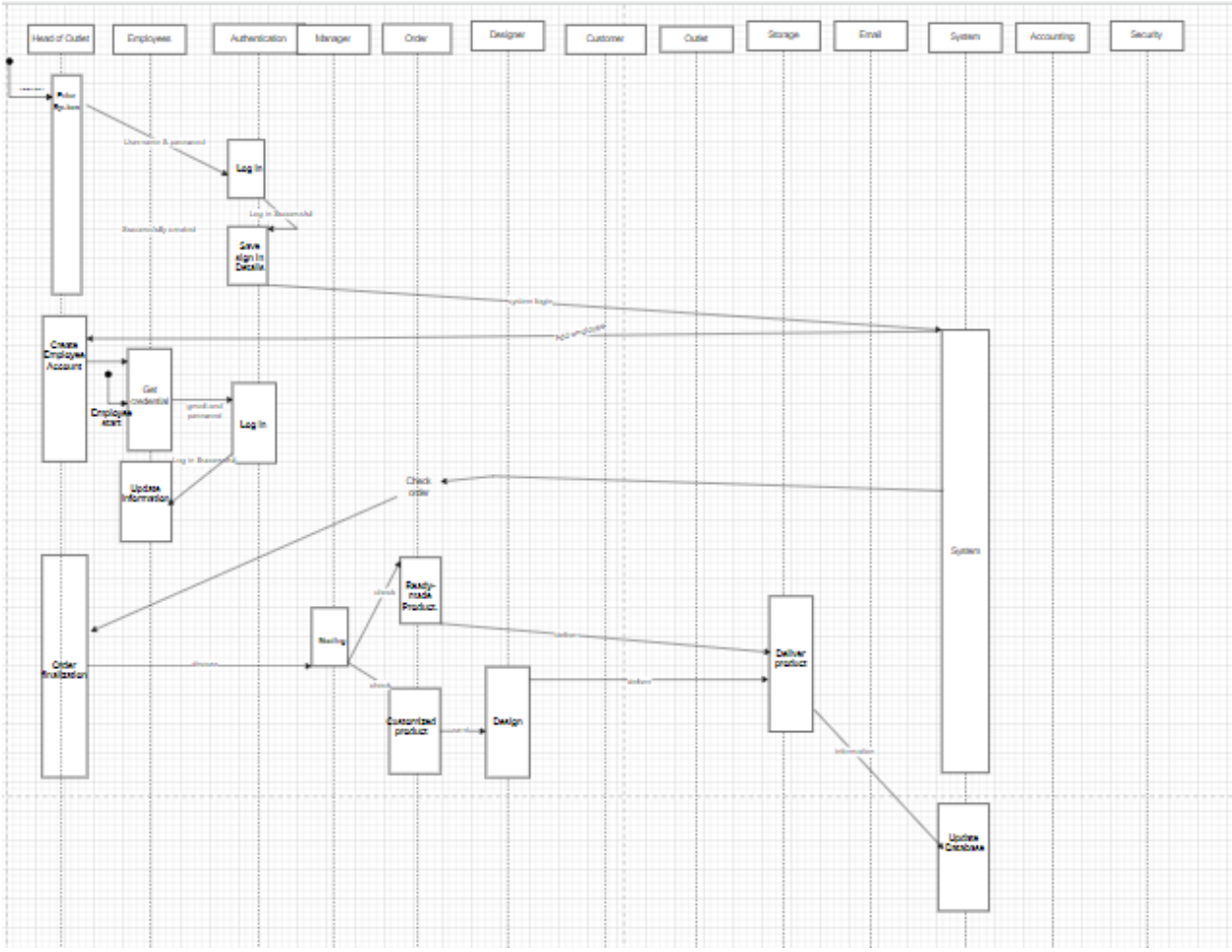


Fig-82:Behavior Model -12

Sequence Diagram:


Head of Outlet
Employees
Authentication
Manager
Order
Designer
Customer
Outlet
Storage
Email
System
Accounting
Security
Log In
Save sign In Details
Create Employee Account
Get credential
Employee start
Log In
Update Information
Check order
System
Order finalization
Waiting
Ready-made Product
Customized product
Design
Deliver product
Update Database

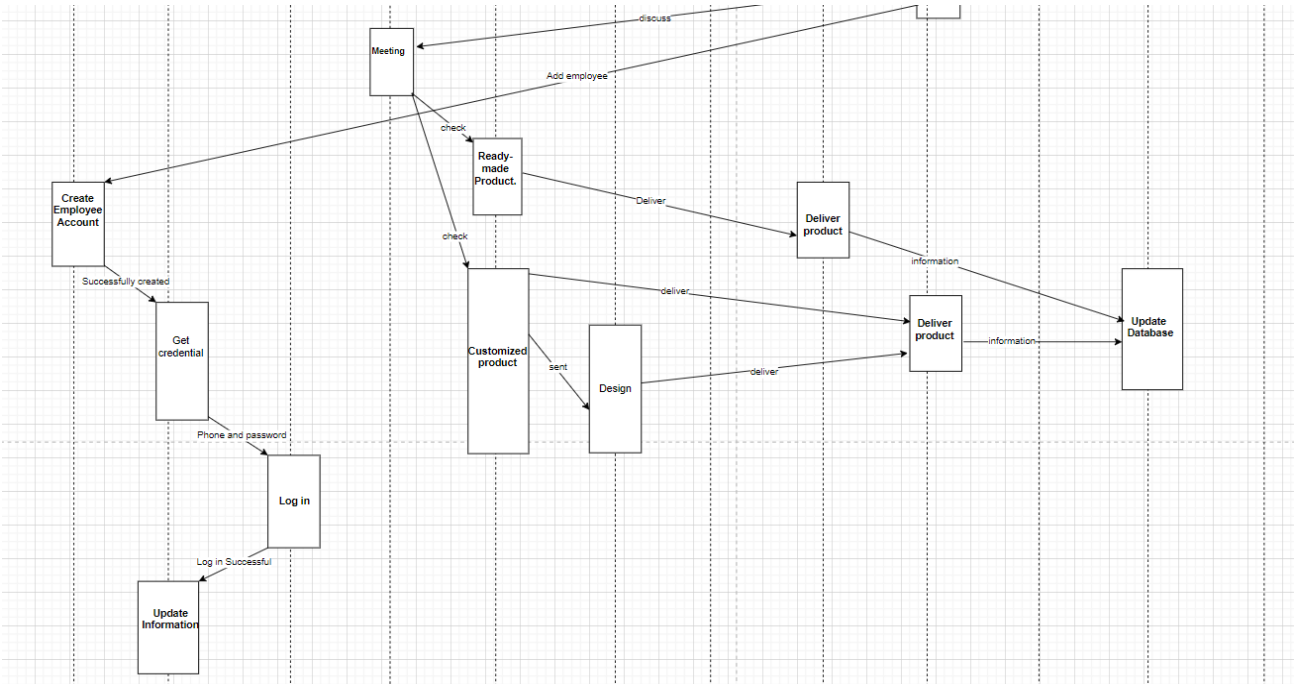


Fig-83:Sequence Diagram-1

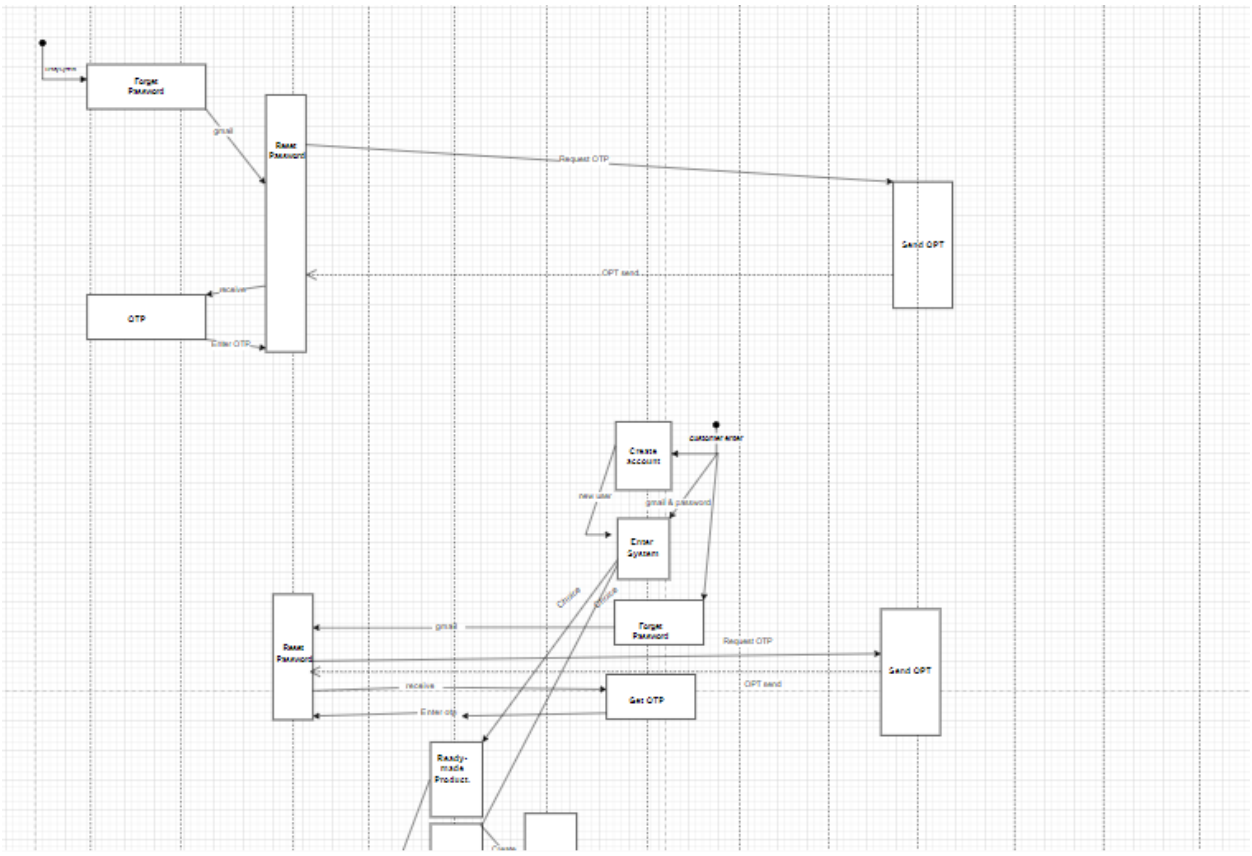


Fig-84:Sequence Diagram-2

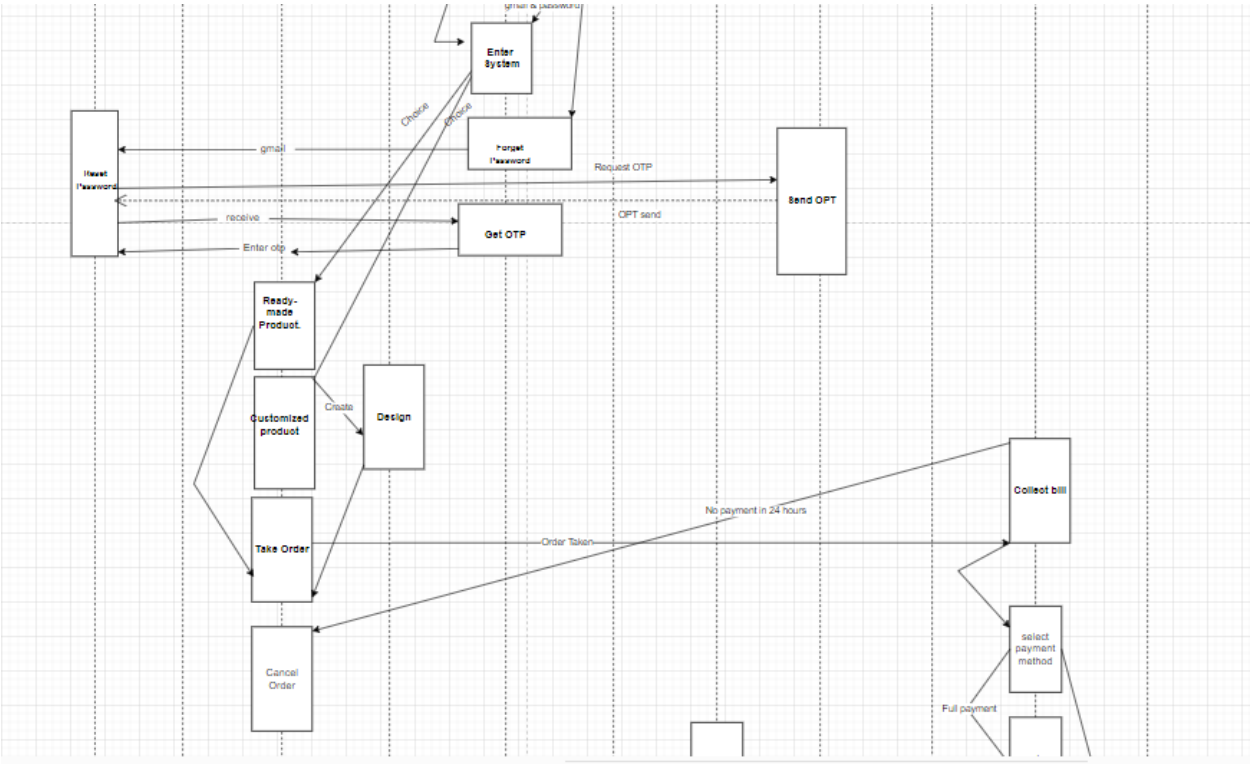


Fig-85:Sequence Diagram-3

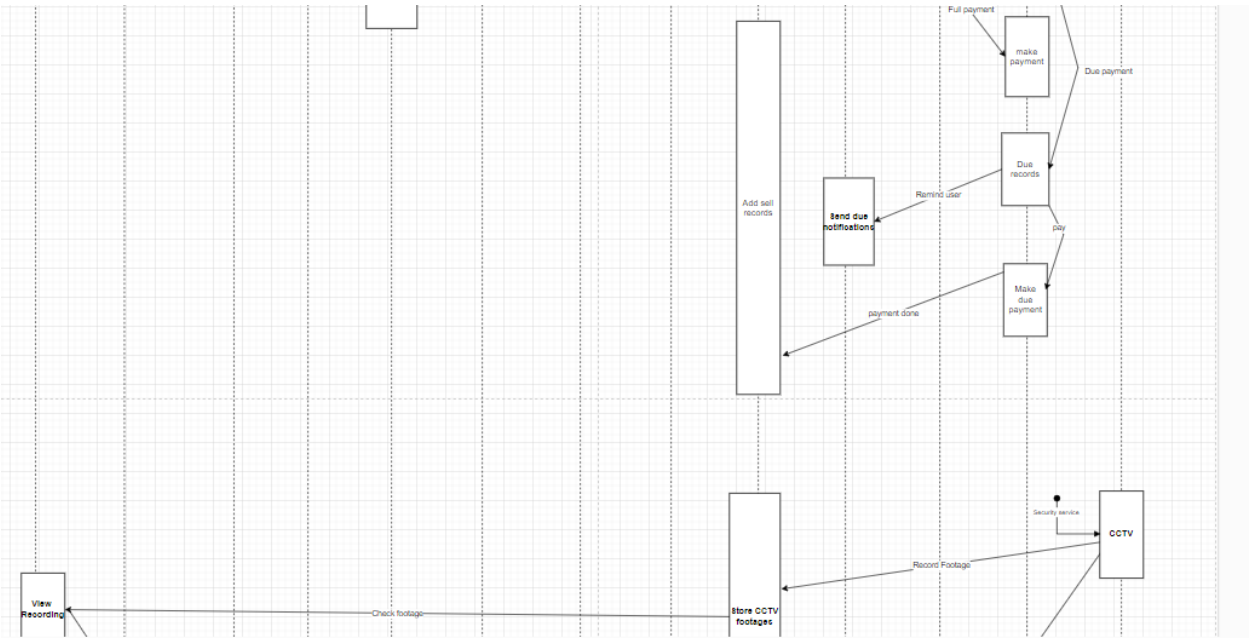


Fig-86:Sequence Diagram-4

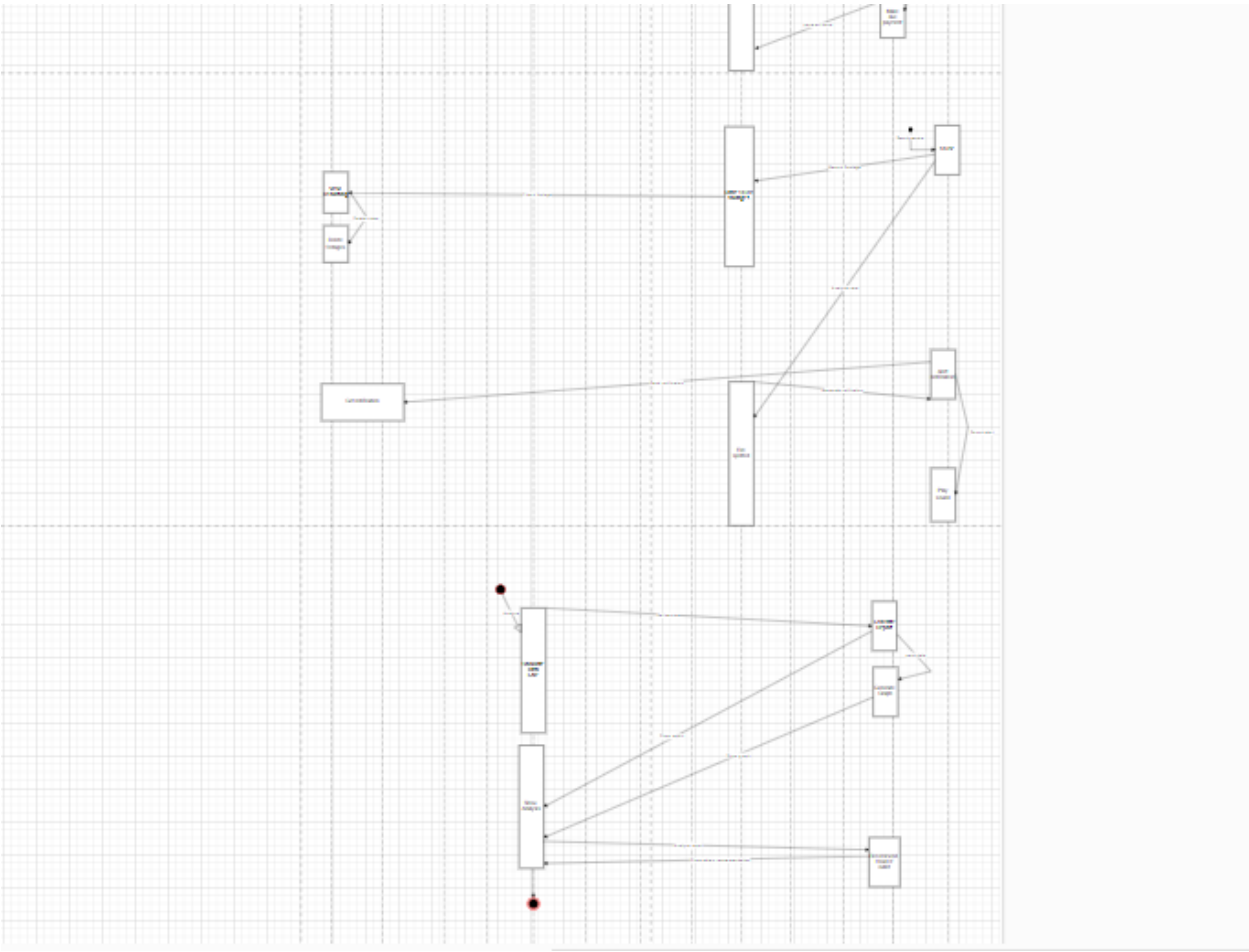


Fig-86:Sequence Diagram-5

[Clear view]

Data Flow Diagram (DFD)

A data-flow diagram is a visual representation of how data moves through a system
or a process. A data flow diagram (DFD) shows how information moves through any
system or process. It displays data inputs, outputs, storage locations, and routes
between each destination using predefined symbols such as rectangles, circles, and
arrows as well as brief text labels.

Level: 0

Name: TACMS

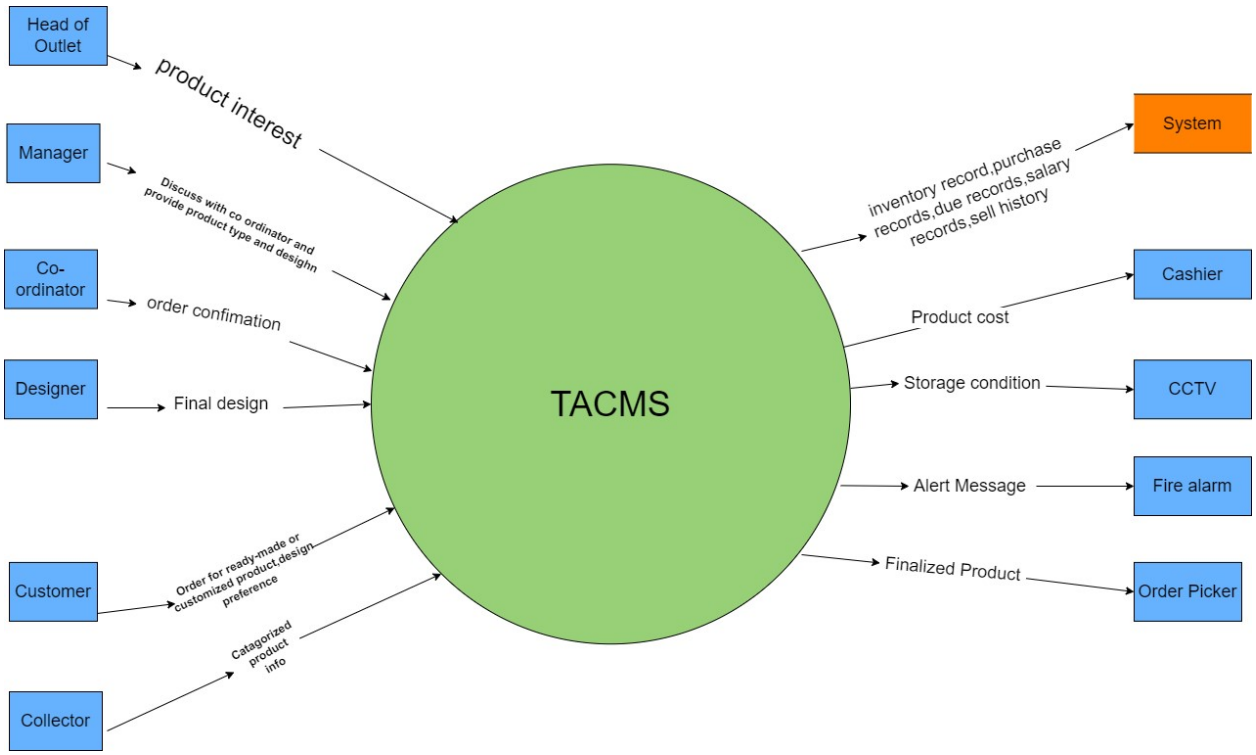


Fig-87:DFD-1

Level: 1

Name: Details TACMS

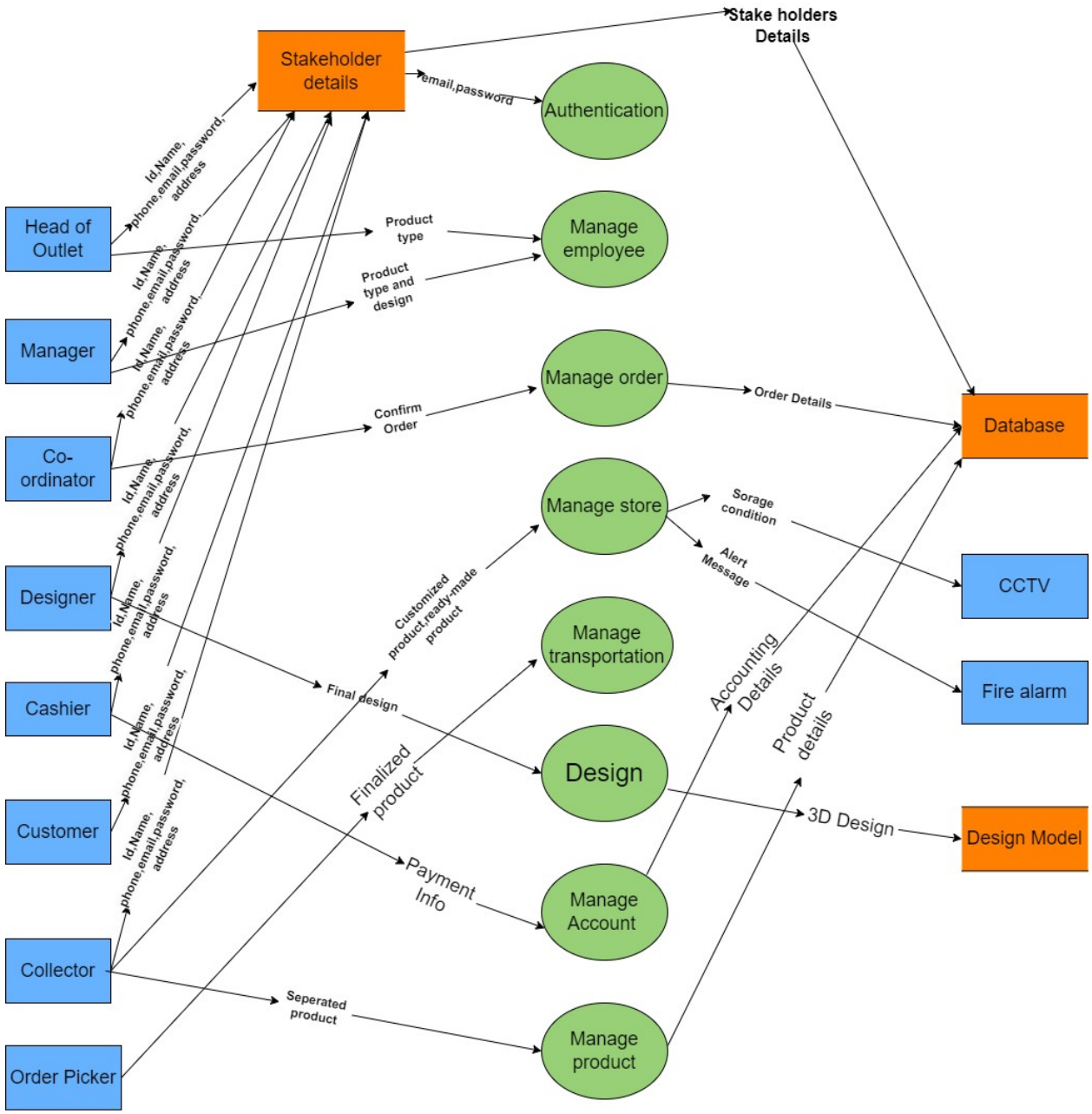


Fig-89:DFD-2

Level: 1.1

Name: Authentication

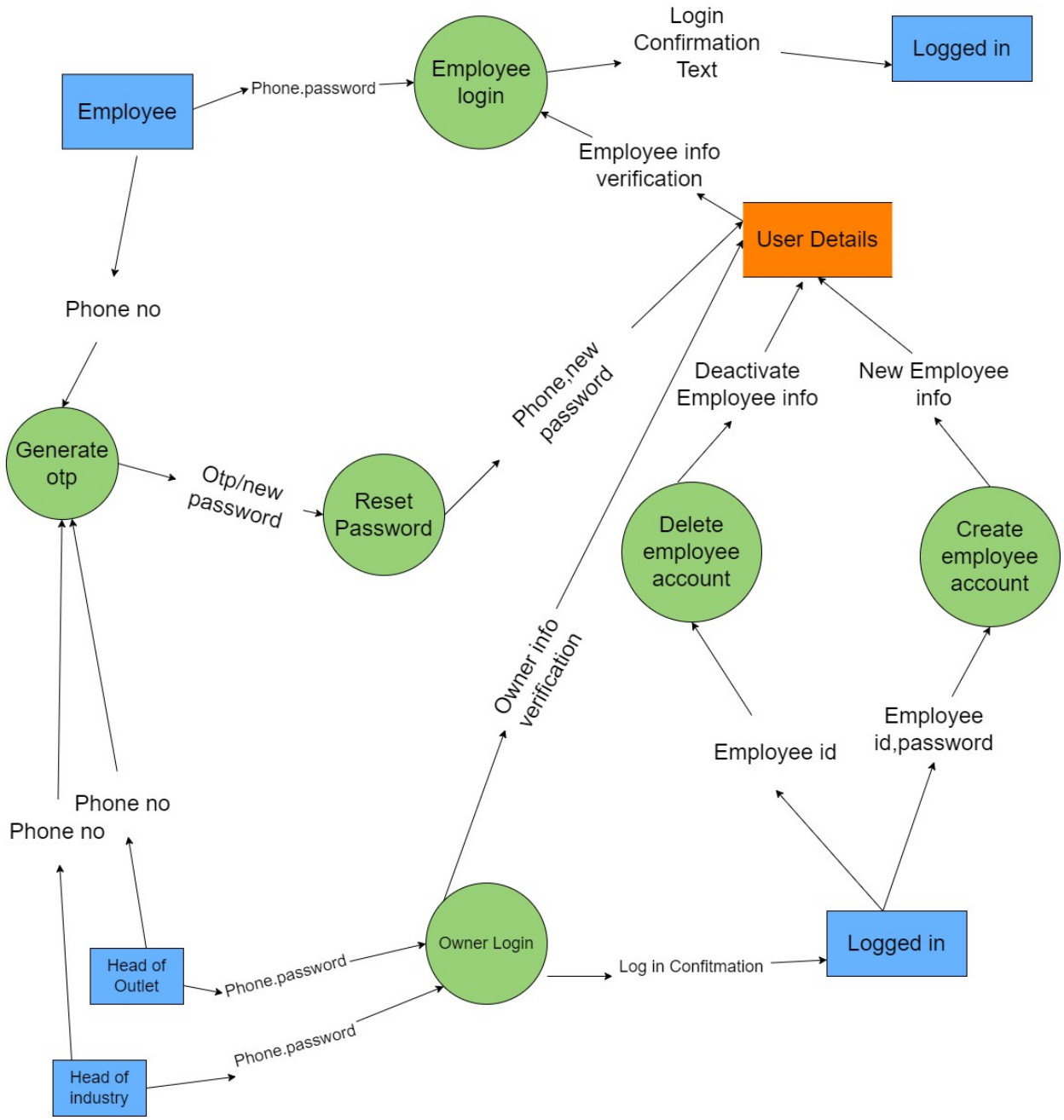


Fig-90:DFD-3

Level: 1.2

Name: Employee Management

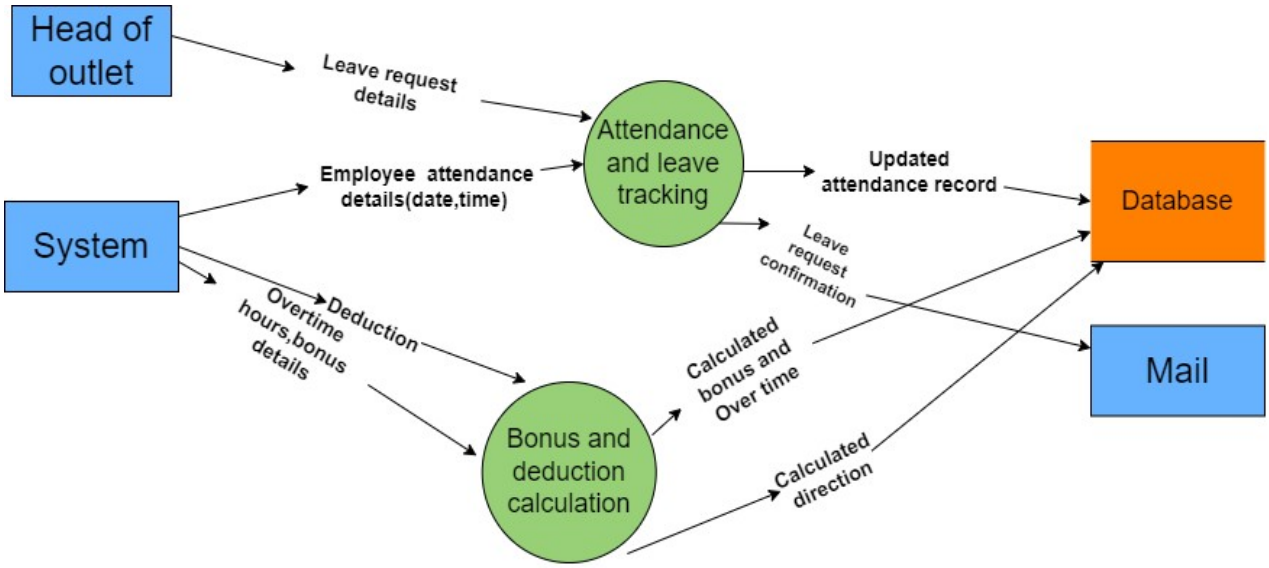


Fig-91:DFD-4

Level: 1.3

Name: Order Management

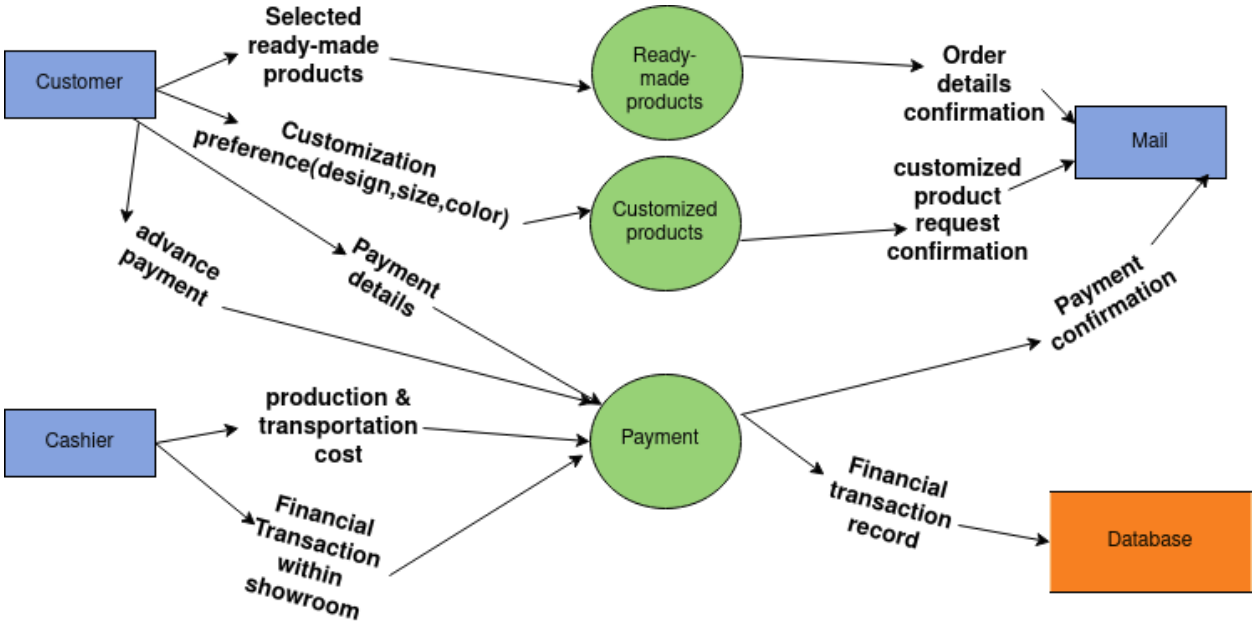


Fig-92:DFD-5

Level: 1.4

Name: Transport Management

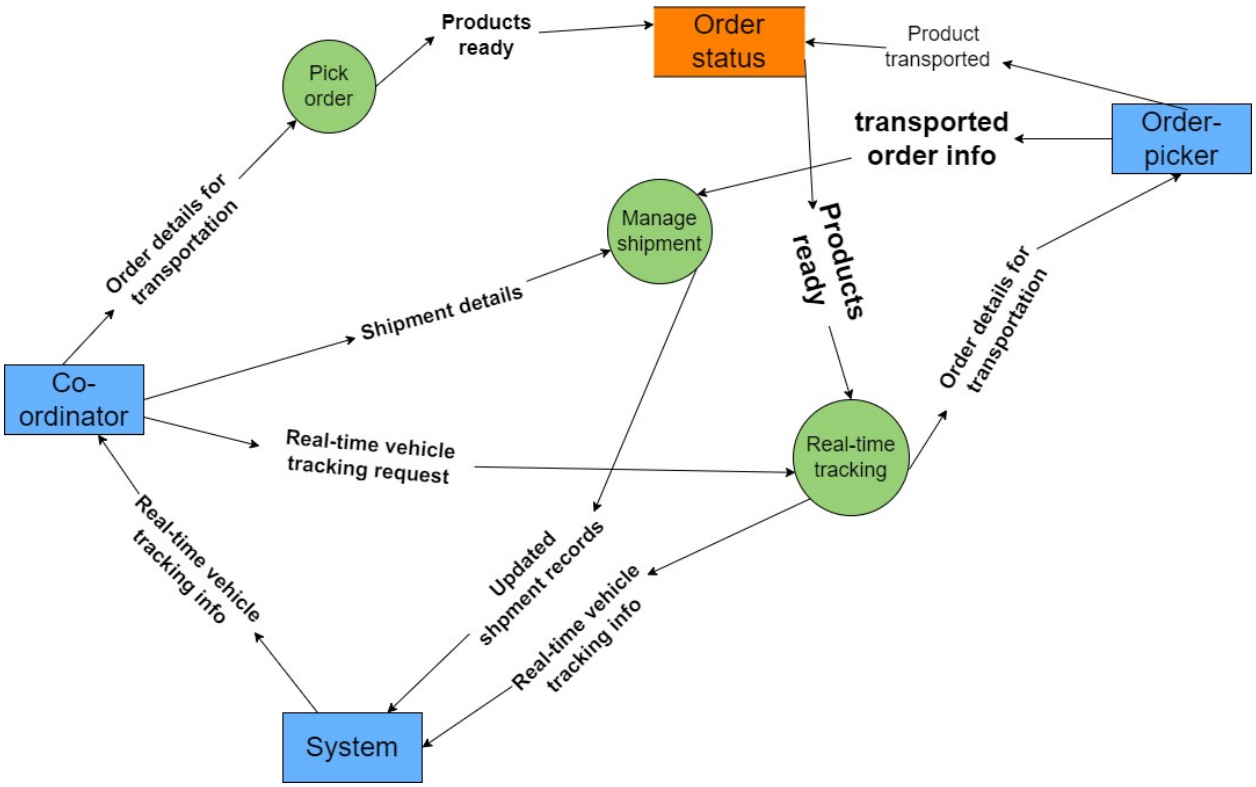


Fig-93:DFD-6

Level: 1.5

Name: Account Management

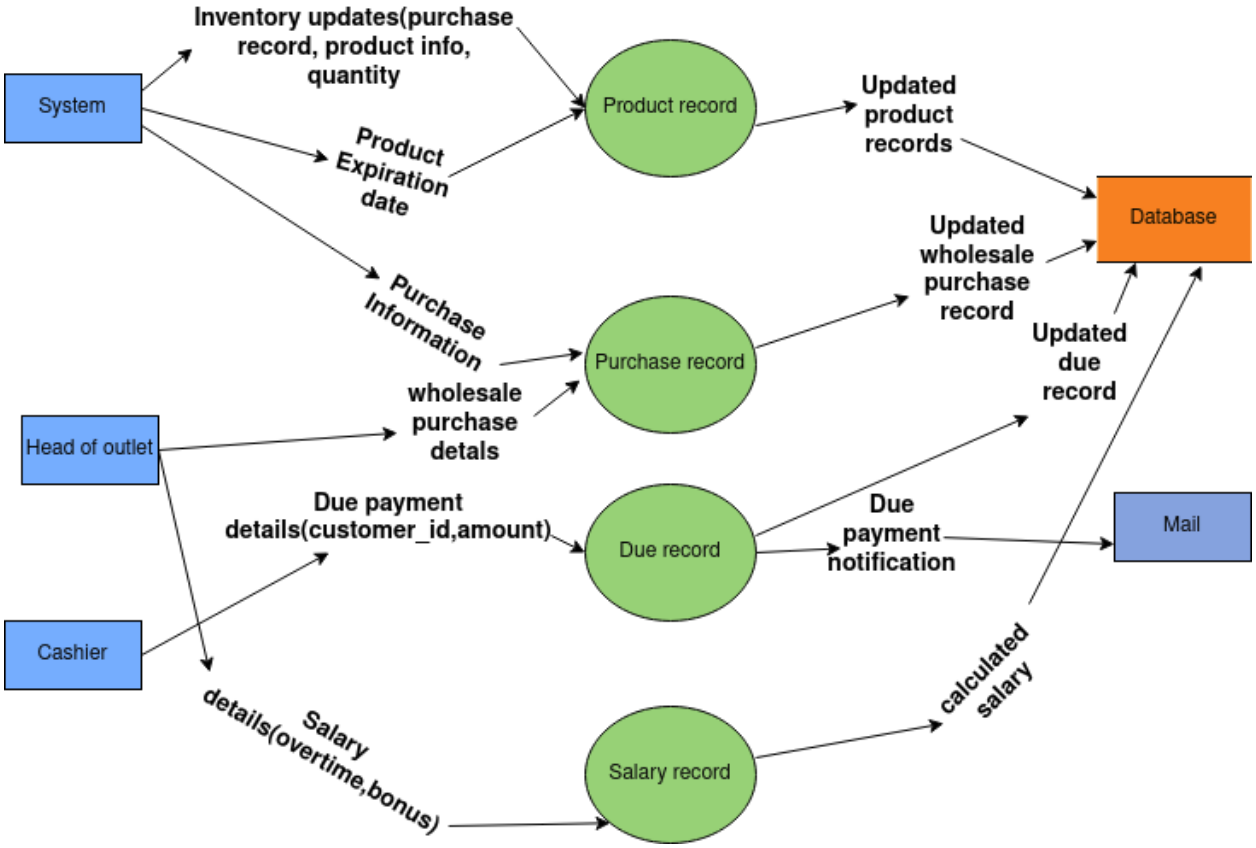


Fig-94:DFD-7

Level: 1.6

Name: Design Management

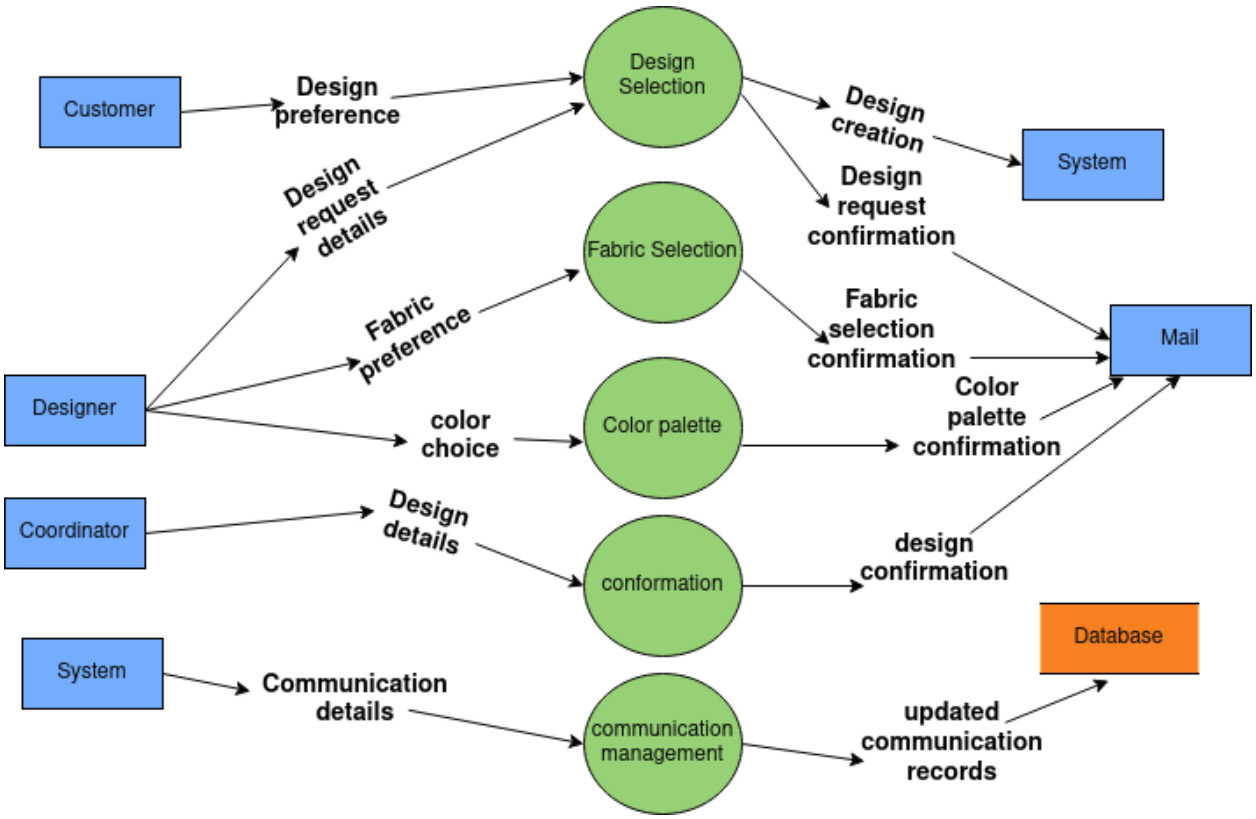


Fig-95:DFD-8

Level: 1.7

Name: Product Management

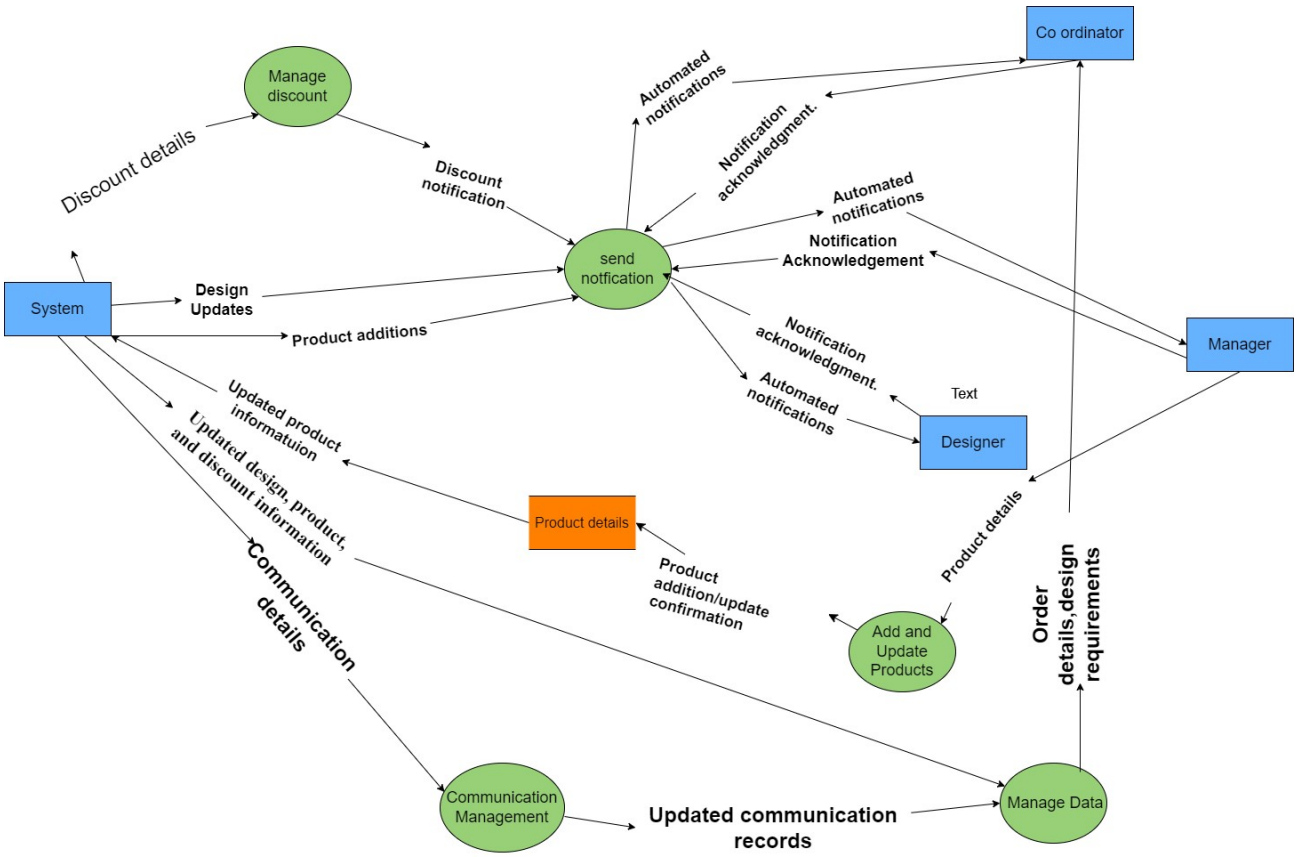


Fig-96:DFD-9

Level: 1.8

Name: Storage Management

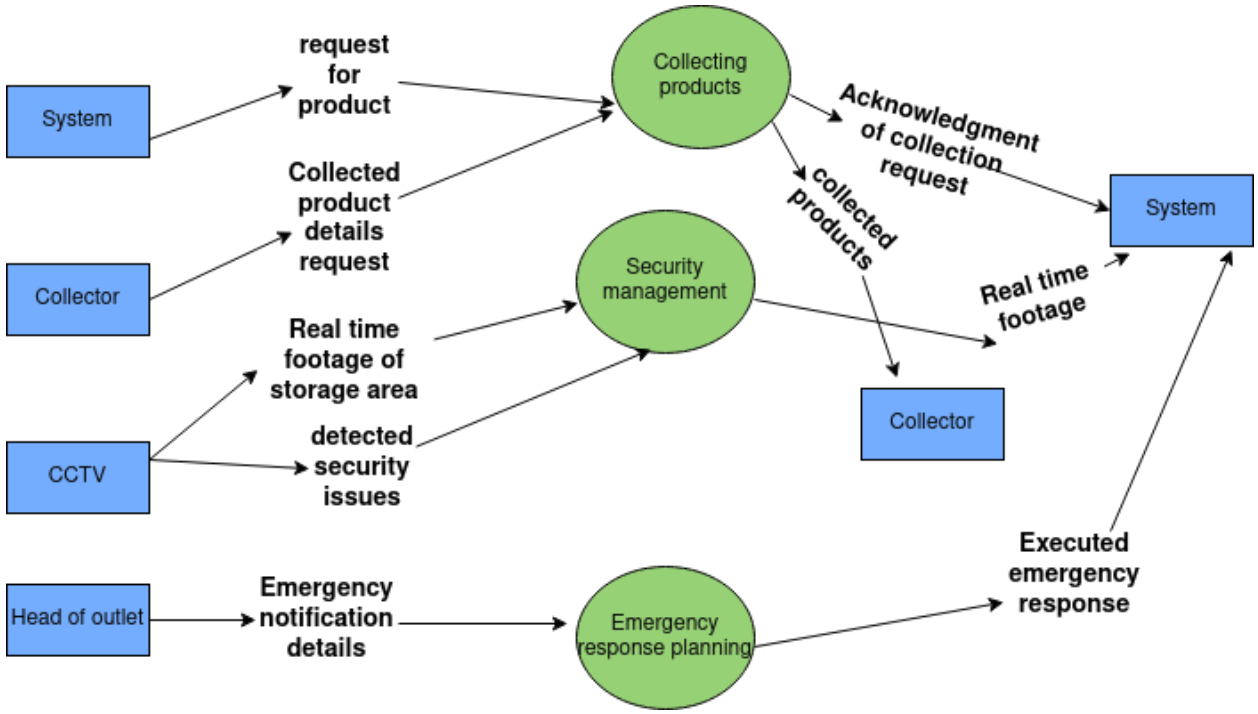


Fig-97:DFD-10