Institute of Information Technology

University of Dhaka

S.R.S. Assignment

Course Code: SE406

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Table of Contents

1. Introduction

This chapter is a part of our software requirement specification for the project “SA Paribahan Automated System” . In this chapter we will focus on the intended audience for this project.

1.1 Purpose

This document briefly describes the Software Requirement Analysis of SA Paribahan Automation System. It contains the functional, non-functional and the supporting requirements and establishes a requirement’s baseline for the development of the system. The requirements contained in the SRS are independent, uniquely numbered and organized by topics. The SRS serves as an official means of communicating user requirements to the developer and provides a common reference point for both the developer team and the stakeholder community. The SRS will evolve over time as users and developers work together to validate, clarify and expand its contents.

1.2 Intended Audience

This SRS report is intended for several audiences including the users (senders and receiver) , employees, HR managers, project managers, developers and testers.

• The users will use this SRS to verify that the developer team has created a product that is acceptable to the customer.

• The project managers of the developer team will use this SRS to plan milestones and a delivery date, and ensure that the developing team is on track during development of the system.

• The designers will use this SRS as a basis for creating the system’s design.The designers will continually refer back to this SRS to ensure that the system they are designing will fulfill the customer’s needs.

• The developers will use this SRS as a basis for developing the system’s functionality. The developers will link the requirements defined in this SRS to the software they create to ensure that they have created a software that will fulfill all of the customer’s documented requirements.

• The testers will use this SRS to derive test plans and test cases for each documented requirement. When portions of the software are complete, the testers will run their tests on that software to ensure that the software fulfills the requirements documented in this SRS. The testers will again run their tests on the entire system when it is complete and ensure that all requirements documented in this SRS have been fulfilled.

2. Current Business Structure and Block Diagram of SA Paribahan Ltd. (Assignment -1)

2.1. Transportation

The product delivery or transportation takes several stages to be completed. Parcel registration is the first step. A parcel is registered by incorporating the receiver's name, sender's phone number and an unique ID with it. Then the local office provides the specific transportation vehicles (truck) with necessary information along with these parcels to reach the correct destination.

2.2. Management in Distribution office

The distribution office is mainly a district office for distribution from where the package is sent to regional offices for the delivery. If a parcel has to be sent from one district to another, for example, from Rajshahi to Chittagong, then the package is sent to Chittagong and from there the distribution department sends the parcel to the regional office for the delivery.

2.3. Management in Branch Office

Branch offices receive the parcel from the Distribution Office. Branch offices are located at different localities to save the local people from the hassle of receiving parcels from remote distribution offices.

2.4. Cash Counter

In exchange for money a courier service transports an object from one location to another. So the office of the courier service where an object is dropped off has a counter where the sender must pay the fee. In some cases when the sender doesn't pay the whole amount, the person that picks up the parcel must pay the rest of the fee at the counter.

2.5. Contingency Policy

If a parcel is lost during the delivery process, the courier service settles it internally among themselves.

2.6. Warehouse Management

Warehouse management systems are managed manually. They attached their slips with goods and found their goods according to their slip ID. But if goods are in huge numbers they need to sort them.So, there is a scope of automation systems.

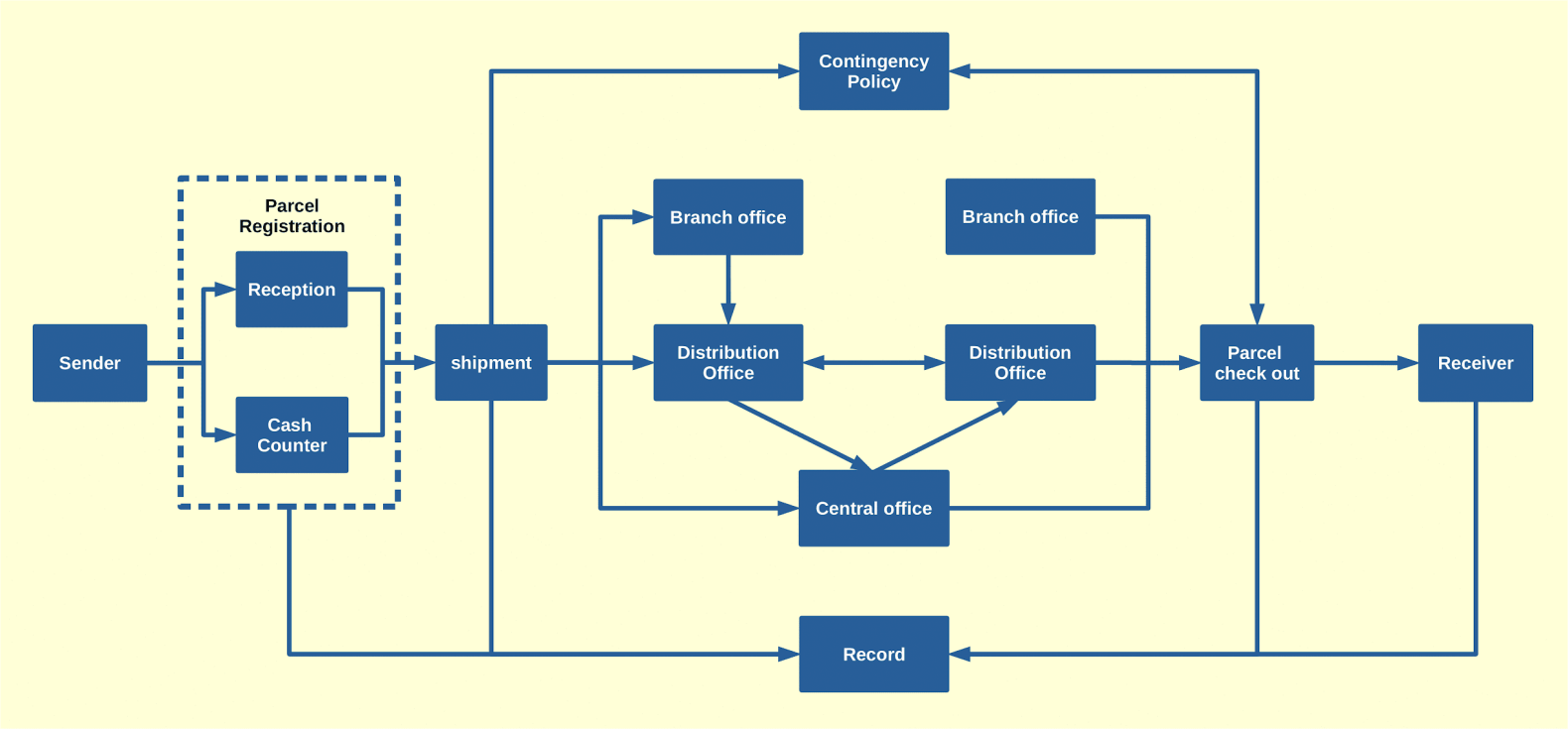
2.7. Keeping Records

When a parcel is made a record is taken according to the mobile operator in the "parcel receiving sector". Branch offices keep every record of goods' parcel documents manually in their record book of the receiving section.

On the other hand, when branch offices receive goods from their distribution office, the "parcel delivery section" keeps the record of goods according to their mobile operator's sim. They keep track of the good's

receipt’s ID, receiver’s mobile number,issue date, and receiver's signature. They also keep records of the distribution office’s issue number manually.

2.8. Block Diagram of SA Paribahan Ltd.:



3. Quality Function Deployment (Assignment- 2)

QFD or **Quality Function Deployment** is a focused methodology for carefully listening to the voice of the customer and then effectively responding to those needs and expectations. First developed in Japan in the late 1960s as a form of cause-and-effect analysis, **QFD** was brought to the United States in the early 1980s. Yoji Akao, the original developer, described **QFD** as 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, and ultimately to specific elements of the manufacturing process." The author combined his work in quality assurance and quality control points with function deployment used in value engineering.

On visiting "SA Paribahan Parcel & Coach Service" we have identified some sectors where further digitalization in management can be made. We have identified several stakeholders which include customers, employees [Warehouse workers, Accountants, Record Officer, Branch Managers, Central Executives, Distribution Manager, Transportation Manager].

3.1. Normal Requirements

These are the general requirements that are stated by the customer during meetings as his goals and objectives of the software. Normal requirements completeness leads to customer satisfaction. For example, requested types of specific system functions. Here are normal requirements:

1. Customers, employees [Warehouse workers, Accountants, Record Officer, Branch Managers, Central Executives, Distribution Manager, Logistic Operators] will create their account with their name, phone number, and NID number and get a unique ID.
2. Warehouse workers will sort the parcel in a systematic manner according to the warehouse management sector.
3. Accountants must maintain a cash counter and update the central system.
4. Courier parcel has parcel id, parcel product id, parcel customer id, parcel name, parcel type, parcel description.
5. Customers have customer id, customer name, customer mobile number, customer password, customer address.
6. The branch office has branch office id, office employee id, Office address.
7. Shipments will have shipment id, driver id, shipment date, shipment destination.
8. Tracking parcels by live monitoring using QR code.
9. Online payment systems through mobile banking.
10. Taking parcels directly from the sender's homes. (digital signature with QR code).
11. Delivering parcels directly to the receiver's homes.
12. Keeping track of received and sent parcels.
13. Logistic operators track transports automatically.
14. Logistic operators track the address incorporated with the parcels and ensure proper distribution.
15. Employee Profile and categorization.

3.2. Expected Requirements

These requirements are not explicitly defined by the customer but generally, their presence is expected by the customer in the software. So these requirements are implicit in the product and are so fundamental that they are not required to be mentioned explicitly. Their absence will lead to dissatisfaction. Examples of these requirements are ease of user interfacing.

1. Interactive app & friendly UI.
2. A reliable, responsive and secure database.
3. Ensure customer privacy.
4. Ensuring effective interface between online and offline data for fail-safe.
5. Customer support in case of lost parcels or any other problems.

3.3. Exciting Requirements

Exciting requirements are not explicitly mentioned by the customer and the customer does not expect such requirements. But if they are found and available their presence gives very much satisfaction to the customer. An example is word pad software that is requested with standard features.

1. AI-powered pathfinding system to bypass the traffic jam
2. Chatbots to answer customer queries when human correspondents are not available
3. Drone-powered delivery service within Dhaka.
4. Food delivery will be added as an extra option.
5. Live tracking of parcels: The customer will be able to change the delivery address anytime with an added charge.
6. Live tracking of the delivery vehicle for logistical purposes.
7. Employee Salary management.

4. Usage Scenario (Assignment - 3)

4.1. Parcel Description

4.1.1. User Perspective

Every order has associated information that is used for logistical purposes. The users who go to the office to give the object that is to be delivered, have to provide information such as name, phone number, delivery address and product description. This is used to generate a customer id. A user can be a customer or an employee. The customer can place delivery requests and provide the necessary information. A pickup service will pick up the courier for delivery and upon pick up will fill out the rest of the information necessary for the order and verify it. And a digital memo will be created. Users without accounts must take the courier to an office to place a delivery order and provide the rest of the information.

The employee having taken the parcel and the information directly from the customer or via the platform will now generate a parcel id, parcel product id, customer id, parcel name, type and parcel description. All the information will be attached to the parcel on a printed paper by the employee. The information memo will also contain a QR code for further verification of content and delivery on various delivery points.

4.2. Parcel Entry

1. Account Management
2. Parcel Entry
3. Branch Office
4. Distribution Office
5. HR Department
6. Account Section (Transaction Procedure)
7. Transportation System
8. Warehouse Management
9. Parcel Delivery
10. Home Delivery

4.2.1. Account Management

There will be 2 types of users of this app. For registering an account, the common fields a user has to provide are his/her full name, contact number, email address, user type, user name (unique) and password. Apart from that, there will be additional fields for each user. In case of customers, he/she has to provide his credit card number along with the above information. Additionally, the app will provide the facility to recover their password through sending an OTP to their provided phone numbers or by sending a confirmation email.

After signing up, the customers will be able to register their parcels for shipping or track the current location of a parcel he is going to receive. For shipping, he has to provide the receiver’s contact number,email address and delivery address. Moreover, the customer will be able to check their past shipment history or receipt history. There will also be an option to rate every shipment.

Whenever a user requests a shipment, the management team will get a notification. The management team will be able to accept or deny any requests. There will be a list of parcels along with necessary shipment details corresponding to each customer.

4.2.2. Logistics

A. Branch Office

Branch office accepts parcels from customers for delivery purposes. It also handles parcels for delivery after receiving them from the distribution office. In these processes, parcel information is stored in the Digital Memo. Manager of the branch oversees all these processes. If we analyze the branch office mainly has two tasks:

1. Receives parcels for delivery from the customer after confirming the payment status.Then the manager enters all the information to the system for tracking and delivery purposes. The parcel is then handed to the transport system to deliver it to the Distribution office for delivery.
2. Parcels sent from the Distribution office are received here. Then the parcel's tracking information is updated on the system. From there the customer receives the parcel and the delivery status is turned delivered on the system then.

B. Distribution Office

After receiving parcels from the branch office, Distribution office have mainly two tasks.They are:

1. Updating the parcel's current status on the system.Digital Memo's information(id number,SenderName,Receiver Name,receiver's Mobile Number) of parcels are updated to the transportation system for further use.Then the Distribution office will decide to which Branch office the parcel is to be sent.It will be done automatically through the system depending on the delivery location.

2. After confirming the next branch office for the delivery,the software will automatically assign the delivery to the transport system depending on the availability of vehicles.The software will also check for available vehicles for faster transport.Distribution will also forward parcel as well as parcel's information to the transport office.

4.2.3. Payment and Transaction Procedure

A. Customer Perspective

There are two types of users from the perspective of owning an account on the platform:

1. With accounts
2. Without accounts

The users without accounts must open an account by providing the following information:-

A. Phone number
B. Name
C. Address
D. Email

There are two types of users who have accounts

A. Customers

B. Employees

The employee accounts must be opened with a special permission from the employer's account.

The person that manages the payment sector of the platform is also an employee. They receive the payment from a customer and they input the following information about the order which are the amount, customer name, phone number (if the customer has an account on the platform in which case they can set the info according to the already existing account), delivery address, order description and the platform generates an order id, transaction date and time. Then the platform makes a page memo of the transaction that can be printed and given to the customer. There is also an option to pay via electronic mediums as credit cards and e-payment services. Users with accounts as well as without accounts can pay with having to use liquid cash. In this case if the customer is someone without an account, the employee of the counter must input the customer name and phone number as well as the other info but in the case of customers who have accounts, their info is automatically imported into the digital memo**.**

The employee accounts can only see the page where the order information is inputted. People who want to order from home must open an account on the platform.

B. Employee Perspective

As the employee accounts must be opened with a special permission from the employers it has permissions to manage and confirm transactions. If the customer comes into the office with the parcel, after the customer provides the information, the employee checks its feasibility and then inspects the package and weighs it and fills out the rest of the order information:

1. Order weight
2. Order Class
3. Order Delivery Batch Time

The platform generates an order id, transaction date and time. The employee receives the payment from the customer then the platform makes a memo of the transaction that can be printed and given to the customer.

There is also an option to pay via electronic mediums as credit cards and e-payment services. Users with accounts as well as without accounts can pay without having to use cash. The employee accounts can only see the page where the order information is inputted. People who want to order from home must open an account on the platform and pay for the delivery when the parcel is picked up or via electronic mediums such as bKash and Rocket. After the customer has already made a delivery order online, he/she will be provided a pre-made receipt and QR code at doorstep that will be scanned to start the delivery process on the platform.

4.2.4. Human Resources

In the human resources sections, H.R. employees will provide notices to the employees working in the company. So other employees will see announcements in the HR section of their accounts. Human resource managers can assess their employees and provide ample feedback to them. Employees can query for information here as well as give feedback regarding any event that happens in the workplace. This section provides a communication hub for the employees of the various branch and distribution offices

and the upper level management in the headquarters. Moreover, upper level management provides invitations to new employees who are opening an account through the H.R. section.

Labor management

Supervising the human side of warehouse operations entails the use of a labor management system integrated into warehouse management systems. First, the Warehouse Operator assigns tasks to individual warehouse workers using workforce planning and scheduling capabilities. This allows you to track productivity, identify underperforming shifts or workers. The task history environment shows employees' entire history of activities that can be used for analyzing peak labor, optimizing workflow, and finding solutions where obstacles come into play. In the long run, it will increase productivity and efficiency while lowering labor costs.

4.2.5. Transportation System

A. Logistic Operator's Perspective

Basically the transportation system works from one distribution office to another distribution office. They update the information of parcels to the central database. Using a GPS tracker, Logistic Operator can be updated regarding the vehicle's whereabouts. When the vehicle reaches another distribution office, they will receive the parcels and the parcel's location status will be automatically updated. The Logistic Operator keeps track of the parcel's status and vehicle's information throughout the routing process. Driver's name, contact number as well as vehicle number is also included in the vehicle's information.

B. Distribution Officer's Perspective

After receiving parcels from the branch office, they will update the parcel's current status. Then they set the corresponding vehicle for each parcel. Then they enter the Digital Memo's information (Id number, sender name, receiver name, receiver's mobile number) of parcels to the transportation system. On the other hand, when they receive a vehicle and get the parcel's information, they enter the digital memo's status and information.

C. Customer's Perspective

To gain full visibility into product movements, customers are provided with access to an online portal that monitors shipment on the road, alerting to any transit exceptions or unforeseen delays.

D. Order tracking

Package tracking method is to report the arrival or departure of the batch and record the batch identification, the location where observed, the time, and the status.

Not only vendors but certainly customers need insight into the progress of delivery. Provided with an order ID/digital memo, they can track the progress of the goods in a corresponding application.

4.2.6. Warehouse Management

A. Branch Officer's Perspective

When a branch officer receives parcels from the distribution office, they update the parcel's location status and enter the branch office's database.

B. Warehouse Management Officer

Providing a manageable map of the warehouse building, this feature allows for maximizing storage space, managing inventory placement, and improving the flow of items and labor by prioritizing the areas of the shipping queue that require extra attention.Tracking the barcodes assigned to items, warehouse management officer guides the order assemblers to the needed products through the optimized picking route.

Employees of the warehouse then maintain the warehouse according to structure.

C. Picking

Synced with a scanning device, the software helps pinpoint items throughout the warehouse building. They scan the parcel's QR code and assign a slot for that parcel. To ensure the correct lot is selected, pickers double check it: on scanning the attached barcode, the system verifies it. In terms of velocity, batch picking function can be a real timesaver, as it allows for picking many orders in a single run.

D. Packing

Orders can have specific packaging requirements to guarantee safe shipping or improve the unboxing experience. Employees help make sure the packing is performed in the correct order, and as efficiently as possible, according to the rules set by the business.

E. Labor management

Supervising the human side of warehouse operations entails the use of a labor management system integrated into warehouse management systems. First, the system assigns tasks to individual warehouse workers using workforce planning and scheduling capabilities. This allows you to track productivity, identify underperforming shifts or workers. The task history environment shows employees' entire history of activities that can be used for analyzing peak labor, optimizing workflow, and finding solutions where obstacles come into play. In the long run, it will increase productivity and efficiency while lowering labor costs.

4.2.8. Online payment through mobile banking

Customers can enjoy service from the comfort of their homes-thanks to features such as online payment, package retrieval and reception from the customers' doorstep. Payment can be made online by simply creating a billing account on leading platforms such as: bKash and Rocket.

4.2.9. Package Retrieval from Sender's Home

Online payment would be rendered pointless if the customers had to eventually go to the outlets to send and receive their respective packages - hence, a system for retrieving packages from the customers' home should be set-up.

4.2.10. Packages delivered at the doorstep

The customers / users will be saved from the hassle of going to the office and getting their packages. Moreover, the user can confirm receipt of products by scanning the QR code attached to the product which will facilitate and quicken the entire process.

4.2.11. Track of received and sent parcels

Every package will be assigned a unique tracking number and barcode. Every time a package enters or leaves a facility, the QR code will be scanned. For future analysis, there will be options to store data about shipment details for example shipment status and contents.

4.2.12. Track of transports automatically

The transports will be automatically assigned to a specific route by postal code. Moreover, the managers can track the path of the delivery transports via the software. Even in case of delays, the managers will be notified and the managers can notify the customers accordingly.

4.2.13. Track of the address incorporated with the parcels for ensuring distribution

The barcode attached to the parcels will be enough to reveal all the details of the parcel to the managers. The software will automatically assign each parcel to its proper destination.

5. Requirements Modeling (Assignment - 4)

Definition: Requirements modeling uses a combination of text and diagrammatic forms to depict requirements in a way that is relatively easy to understand, and more important, straightforward to review for correctness, completeness, and consistency.

5.1. Customer Account Management

Customers are eligible for service even without the creation of an account. However, a customer can create an account.

In order to create an account on the platform, a customer will be asked to provide the following details:

1. Name
2. User Handle
3. Profile Picture (Optional)
4. Phone Number
5. Email Address
6. Residence Address

Account Roles:

- **Log in:** A customer can log into the system by providing a user handle/email and password.
- **Information Update:** Customers may update their account details after a quick confirmation through email / SMS.
- **Ease of Service:** Customers with existing accounts need not manually provide any personal information while placing an Order. This is especially useful for frequent customers.
- **Password Recovery:** Customers can recover their password in the following system.

HR Manager Perspective: An HR Manager can update account information, password recovery, change employment status, approve salary and bonus.

Note: Employee Accounts are handled by the HR Subsystem (see module 5.4).

5.2. Ordering

Customer Perspective:

When placing a delivery order, a customer must input the following information about the order in the form of a digital memo.

1. Customer name
2. Phone number
3. Email Address
4. Delivery address
5. Receiver Phone Number
6. Payment Type:
   A. Cash Payment by the Sender
   B. Digital Payment by the Sender

C. Cash Payment by the Receiver
D. Digital Payment by the Receiver

7. Other Description(Optional)

After providing the information above the customer will hand over the parcel to the receptionist.

Receptionist Perspective:

After receiving the parcel from the sender the receptionist will weigh the parcel and classify it according to these two classes: After that, the receptionist will inspect the parcel and categorize it. The weight and category will have the following subclasses:

1. Order weight
    a. Under 2 kg
    b. More than 2 kg
2. Order category
    A. Parcel
    B. Money
    C. Documents
    D. Delicate Goods (Fruits, Medicines, etc.)

There will also be information on whether or not the delivery is an emergency or not. The receptionist will then assign a delivery batch time to the parcel.

For transferring money, delivery is not done physically.

After all the previous information is given the platform generates an order id, transaction date, and time. With all the information mentioned above, the system generates a digital memo. This will also be stored in a database in the system.

5.3. Payment and Transaction Procedure

After the enlistment of the parcel that the sender wants to send, he (sender) will have the chance to make a partial payment but after the parcel reception, the receiver will have to make the remaining payment. The transaction information will be saved in the software in the form of a digital memo mentioned in the ordering section. The customers (both sender and receiver) will have the options of both digital payment and cash payment.

5.3.A. Digital Payment

The customers will have the convenience to make their payments via any online banking system namely bKash, Nagad, UCash, Rocket integrated by SSLCOMMERZ. The transaction history will be automatically updated to the customer’s order profile in the form of a digital memo. After the completion of the transaction, the accountant/receptionist will hand over a printed memo to the customer. The customer can also view the digital form in the application.

5.3.B. Cash Payment

Along with online payment, the customer can also make cash payments. After the receipt of the cash money from the customer, the receptionist himself will update the information of the customer's transaction history and provide a memo to the customer.

5.4. Human Resource Subsystem

This will be a software subsystem accessible exclusively to the HR Managers. The HR System will consist of profiles of each and every employee. An employee profile will be created after recruitment. Each employee profile will consist of the following fields:

1. Name
2. Contact Details
   a. Phone Number
   b. Email Address
   c. Residence Address
3. Designation (One of Receptionist, Accountant, Warehouse Operator, Logistics Operator, HR Manager)
4. Working Hours
   a. Regular
   b. Overtime
5. Salary
   a. Base Amount
   b. Active Bonus (if any)
   c. Transaction Information (Mobile Financial Service, Bank Account)
6. Service Duration
7. Service Location

HR Managers can use this system to effectively manage workloads, allocate manpower and disperse salary.

Employees may log into their accounts to retrieve information regarding their working hours, locations, and special notices.

Labor management

Supervising the human side of warehouse operations entails the use of a labor-management system integrated into warehouse management systems. First, the system assigns tasks to individual warehouse workers using workforce planning and scheduling capabilities. This allows you to track productivity, identify underperforming shifts or workers. The task history environment shows employees' entire history of activities that can be used for analyzing peak labor, optimizing workflow, and finding solutions where obstacles come into play. In the long run, it will increase productivity and efficiency while lowering labor costs. The HR manager also has the authority to discharge any employee.

5.5. Logistics System

Logistical Operators Perspective:

The logistical operator will divide the parcels stored in the warehouse according to their destination in batches. Each batch would contain an automatically generated Batch ID. All the parcel's Order IDs would be recorded under the batch information.
Batch information contains:

1. Batch Id
2. Parcel Order Id
3. Transport Registration Number
4. Driver's Employee Id
5. Batch Destination.
6. Date

Then the logistical operator would ship each batch in the pre-scheduled time and confirm the shipment in the database by providing the batch information.

After the shipment arrives in a branch office or a distribution office, the logistical operator of that office would get the batch id and confirm its arrival in the central database. Then he would have to confirm that each package under that batch has arrived unharmed by scanning the QR code on the parcel. If any parcel goes missing or damaged then he would have to inform the Lost and Found Department (Out of the system). After confirming each package, these packages would be stored in the warehouse to be received by the customer.

In the case of a money transaction, there would not be any physical delivery. That's why the money transaction procedure is given in section 5.7.

5.6. Warehouse Management

Warehouse management officer

There will be a map of the warehouse building. When a warehouse operator receives parcels from the distribution office, or a warehouse operator receives parcels from the receptionist they update the parcel's location status (sender's warehouse or receiver's warehouse) and enter the warehouse office's database. Warehouse operators then store the orders according to their type given in the digital memo or barcodes. Employees of the warehouse then maintain the warehouse according to the structure.

Picking

Synced with a scanning device, the software helps pinpoint items throughout the warehouse building. They scan the parcel's QR code and assign a slot for that parcel. To ensure the correct slot is selected, pickers double-check it. On scanning the attached barcode, the system verifies it. When batch info arrives to pick parcels from the warehouse, the warehouse operators find out the corresponding slot of that parcels.

5.7. Money Transaction

When a customer's order category is Money transaction he/she has to follow the steps explained below:

1. Complete the ordering process from the account in the way mentioned above in the Ordering process.
2. The sender will deposit the amount he/she wants to send to the accountant and receive a memo.
3. The receiver will go to the branch office where the money was sent and show the memo number and verify his/her name, mobile number. After that, he/she can collect the money from the accountant.

When the sender selects the order type as a money transaction, he will have the option to select the amount of money. If the sender pays money to the accountant, he will update the transaction in the central database and from the destination office, the receiver can receive it. Accountants from the receiver side can access the transaction and confirm it. He/she will confirm the receiver according to his name and mobile number mentioned before in the transaction.

6. Use Case Diagram (Assignment - 4)

A Use Case describes the system behavior under various conditions as the system responds to a request from one of its stakeholders. In fact, a use case diagram is a kind of visualization of the system where an end-user has an idea of a specific feature. It simply describes a story using corresponding actors who perform important roles in the story and makes the story understandable for the users.

The first step in writing a Use Case is to define that set of “actors” that will be involved in the story. Actors are the different people or systems that use the system or product within the context of the function and behavior that is to be described. Actors represent the roles that people play as system operators. They procedure some information or consume some information. Every user has one or more goals when using the system.

Primary Actor

Primary actors interact directly to achieve the required system function and derive the intended benefit from the system. They work directly with the software. They produce some information and consume some information too.

Secondary Actor

Secondary actors support the system so that primary actors can do their work. They either produce or consume information.

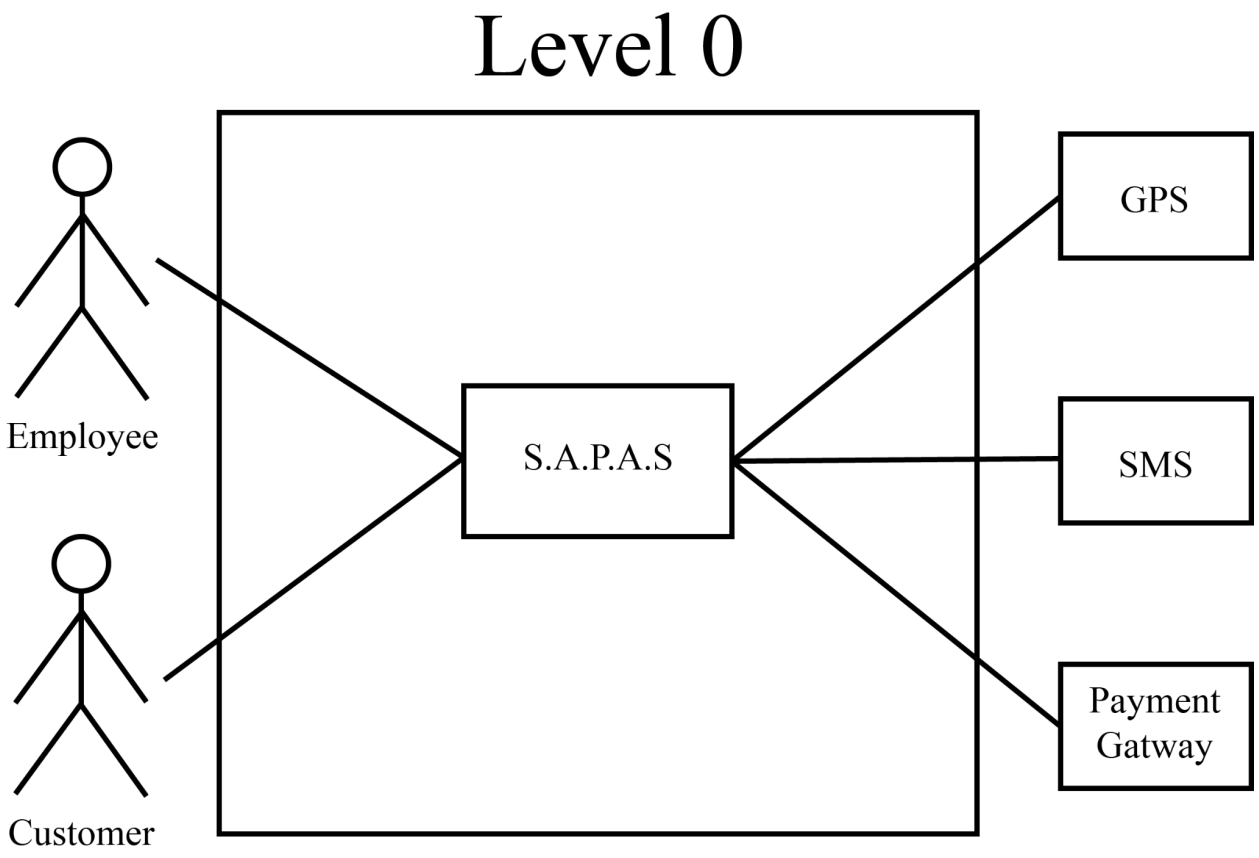
Here is given the use case diagram to observe the non-technical view of the system.

LEVEL 0

Name: High-Level overview of the system
Primary Actor: Employee,Customer
Secondary Actor: GPS,SMS,Payment GateWay

Description of the Use-case diagram Level 0

1. **S.A.P.A.S**



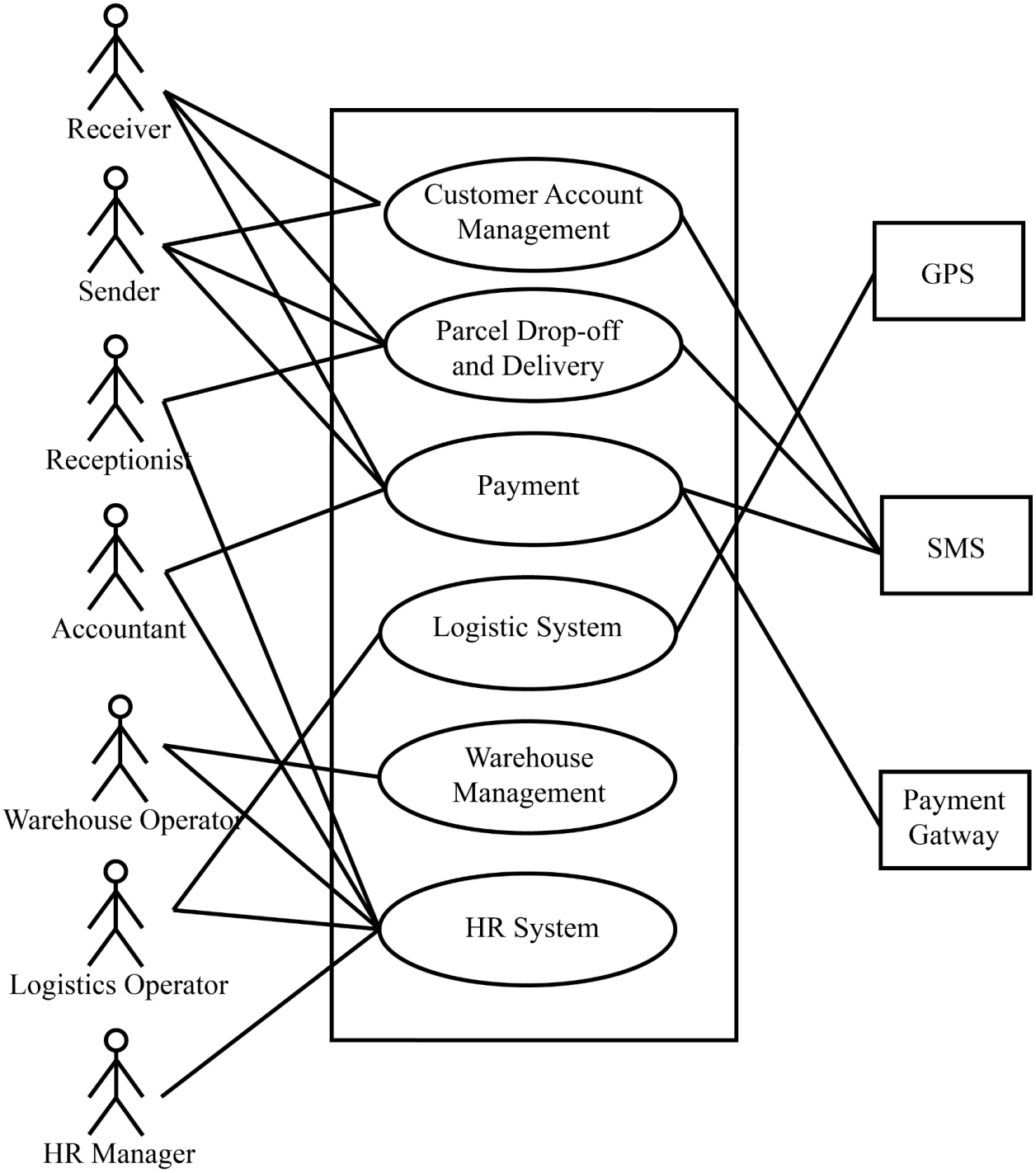
LEVEL 1

Name: SAPAS
Primary Actor: Receiver, Sender, Receptionist, Accountant, Warehouse Operator, Logistic Operator, HR Manager
Secondary Actor: GPS, SMS, Payment Gateway

Description of the Use-case diagram Level-1:

1. **Customer Account management:** Customers must create an account and then log into the system. He/she can update his/her profile, can update his/her personal or login information.
2. **Parcel Drop-Off and Delivery:** Customers will log into the system. Make an order, provide parcel information. The receptionist will add to the parcel's additional information (which is given in details below) and he will verify it. When it's time for delivery, the receiver will provide his name and mobile number . Then, the receptionist will verify it.
3. **Payment:** Customer can pay online using any approved and trusted account through payment gateway
4. **Logistic System**: Logistics operator will update batch information. He will be connected to HR management.
5. **Warehouse management:** The warehouse operator will slot a place according to the map. He will pick from the SAPAS system according to the location.
6. **HR management:** The HR manager will give permission to the employees to create an account. Then, employees will create an account with their information.

Level 1


Receiver
Sender
Receptionist
Accountant
Warehouse Operator
Logistics Operator
HR Manager
Customer Account Management
Parcel Drop-off and Delivery
Payment
Logistic System
Warehouse Management
HR System
GPS
SMS
Payment Gatway

LEVEL 1.1

Name: Account Management
Primary Actor: User
Secondary Actor: HR Manager, Email, SMS

Description of use case diagram level-1.1

1. **Create Account:** In order to create an account on the platform, a customer will be asked to provide the following details: Name, User Handle, Profile Picture (Optional), Phone Number, Email Address, Password. SAPAS will send a confirmation code via SMS to the provided mobile number or email depending on the customers' flexibility. By inputting this code, an account will be created.
2. **Update account:** Users can update his/her email, mobile number, and other Personal Information.
3. **Update LogIn Information:** Users can update their login information. If he selects email to update his login credentials, a link will be sent by SAPAS to his email. By this, he can recover/update his login credentials.
4. **Log in:** Users will log into the system by using his/her registered email-id/ phone number and password.

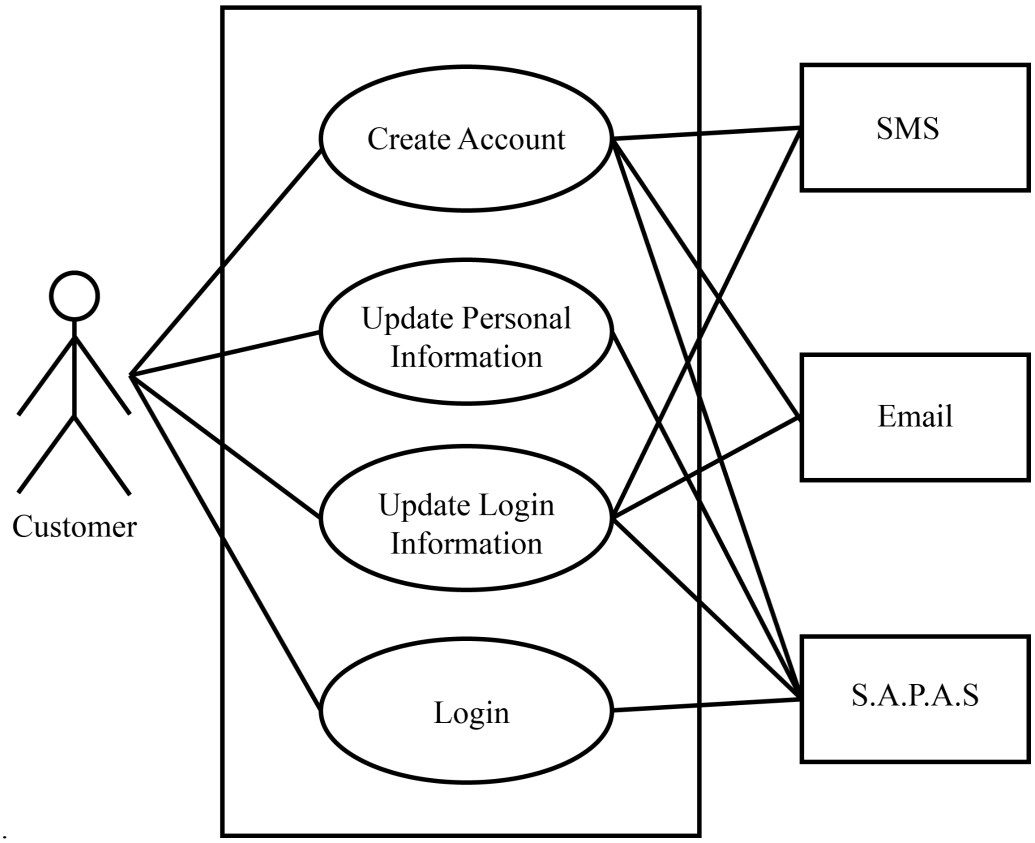
Action / Reply :

Action: User provides credentials.
Reply: SAPAS will check the validity of the given credentials. For valid information system will allow customers to create an account and log into the account.

Action: User provides invalid credentials.(i.e. common username)
Reply: System will show an error message and allows to try again.

Action: The user provides personal and login credentials for the update.
Reply: System will check the validity of the given credentials and after validation updates the given info.

Level 1.1


Create Account
Update Personal Information
Update Login Information
Login
Customer
SMS
Email
S.A.P.A.S

LEVEL 1.2

Name: Order Management
Primary Actor: Sender, Receptionist, Receiver
Secondary Actor: Digital Memo, SAPAS

Description of the use case diagram:

1. **Provide information:** At the time of placing his order, the customer will have to provide his name, email address, phone number, delivery address, receiver's phone number, and payment type. The receptionist will integrate the above information, type, and weight of the product into a digital memo.
2. **Receiver Verification :** For receiving the product, the receiver will have to provide the necessary information (name and phone number) to verify that he is the real receiver.

Action / Reply:

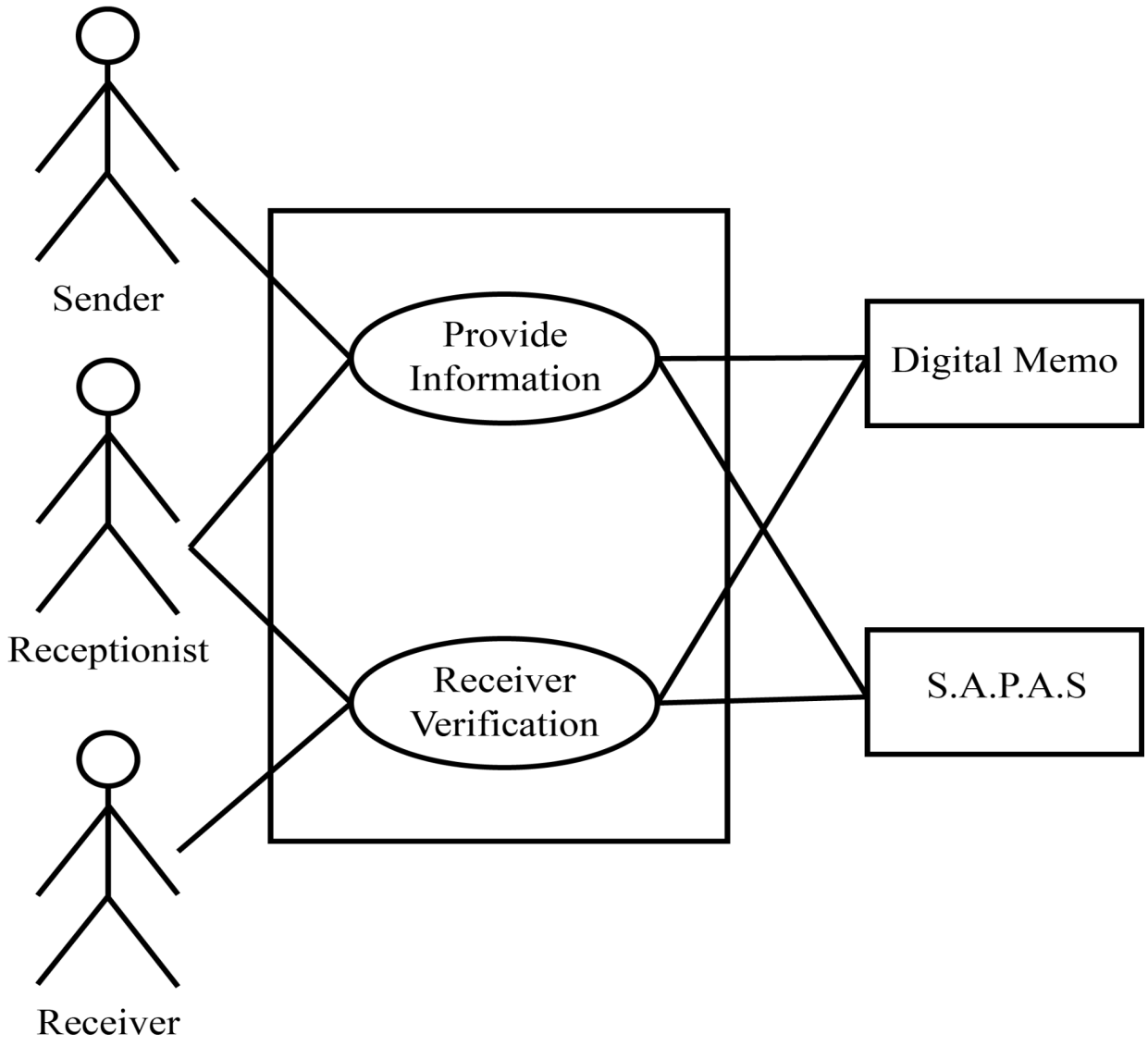
Action: Sender places order
Reply: Receptionist asks for the necessary information

Action: Sender provides the necessary information
Reply: The receptionist saves the information. If the customer already has an account, the email and name will automatically be updated after the phone number is provided

Action: Sender places the order
Reply: The receptionist tracks the type and weight of the order and integrates all the information into the digital memo

Action: The receiver provides the name and phone number.
Reply: The receptionist checks the digital memos to find the receiver's parcel and accordingly provides the receiver his desired parcel.

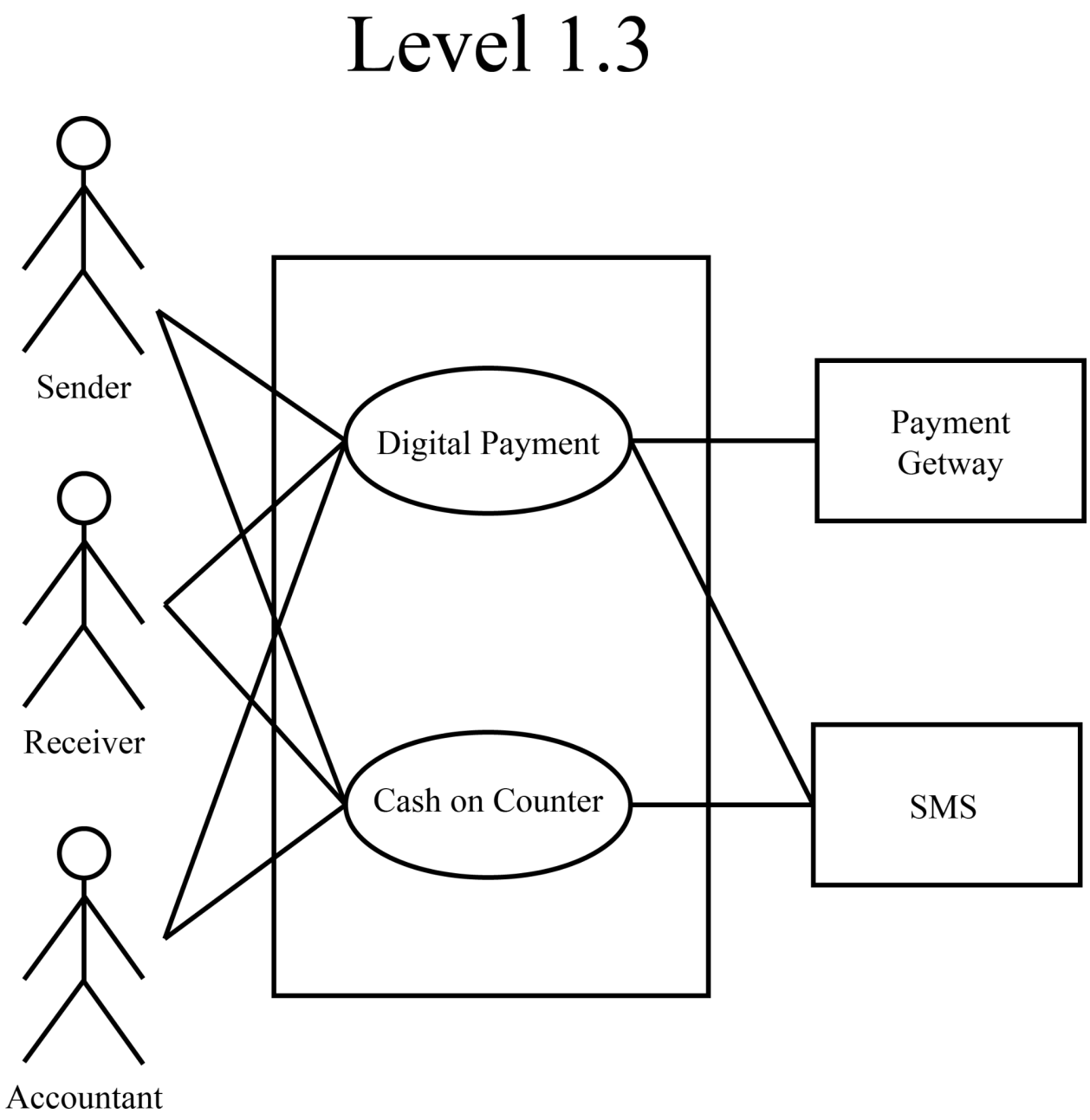
Level 1.2


Sender
Receptionist
Receiver
Provide Information
Receiver Verification
Digital Memo
S.A.P.A.S

LEVEL 1.3

Name: Payment and Transaction
Primary Actor: Sender, Receiver, Accountant
Secondary Actor: Payment Gateway, Sms

Description of the use-case diagram
The sender can make digital payments or cash payments.



LEVEL 1.4

Name: Logistics
Primary Actor: Logistical Operator, Warehouse Operator
Secondary Actor: Database, Shipment, S.A.P.A.S.

Description of the use case diagram

1. **Create Batch:** A Logistics Operator is tasked with arranging Parcels into groups called batches. Each batch's entry will be recorded along with information, such as: Roadmap of the warehouses where a batch will be stored from time to time, Current location, Batch contents and a flag stating whether the batch has reached its target location or not. This will facilitate proper and effective Shipping.
2. **Update Batch:** A Warehouse Operator is tasked with Loading / Unloading, Storing, and Maintaining the parcels stored at a certain Warehouse. They Operate according to the aforementioned blueprint set by the Logistics Operator. A Logistics Operator's domain is only within a certain Warehouse. They can update the Logistics Database with relevant information and make adjustments to the contents of batches, if necessary.

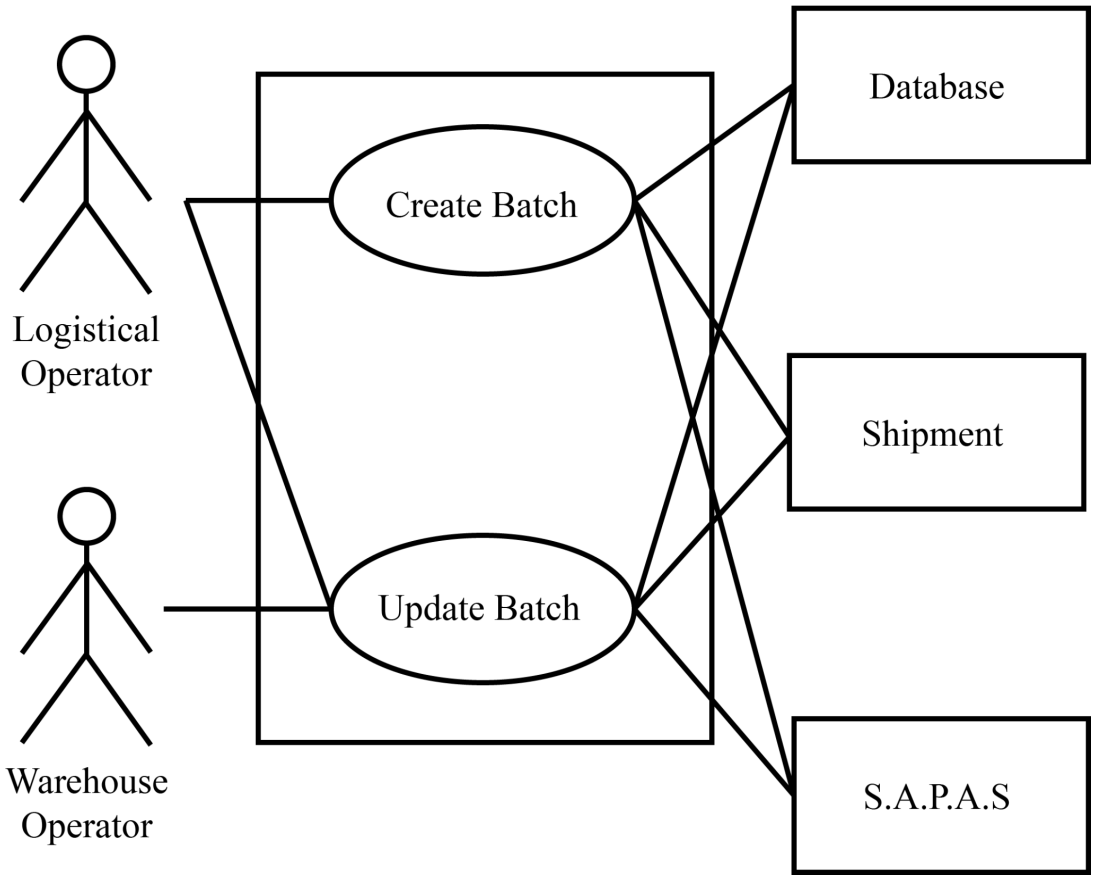
Action / Reply:

Action: Logistics Operator creates a new Batch.
Reply: None [System records information]

Action: A New Batch Arrives at a Warehouse.
Reply: Goods unloaded, Put in storage and Database updated by the Warehouse Operator.

Action: System Notifies Warehouse Operator that a batch is ready to be shipped.
Reply: Operator loads the goods for shipment and updates the Database.

Level 1.4

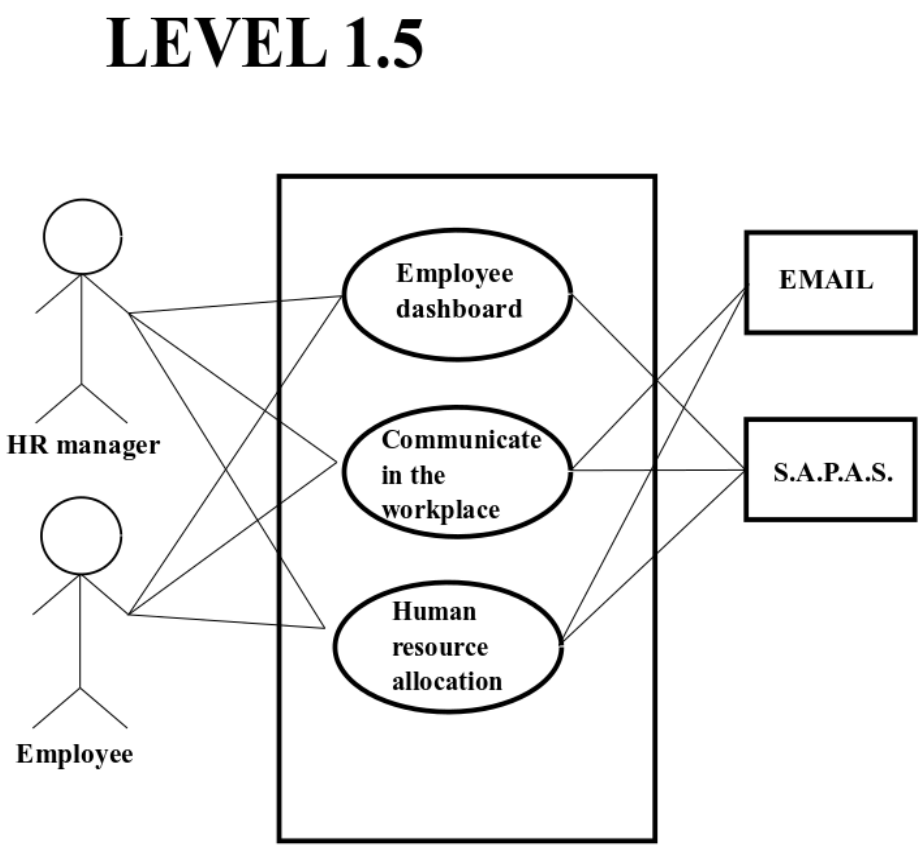

Database
Create Batch
Logistical Operator
Shipment
Update Batch
Warehouse Operator
S.A.P.A.S

LEVEL 1.5

Name: HR Management
Primary Actors: Hr manager, employee.
Secondary Actors: S.A.P.A.S, Email

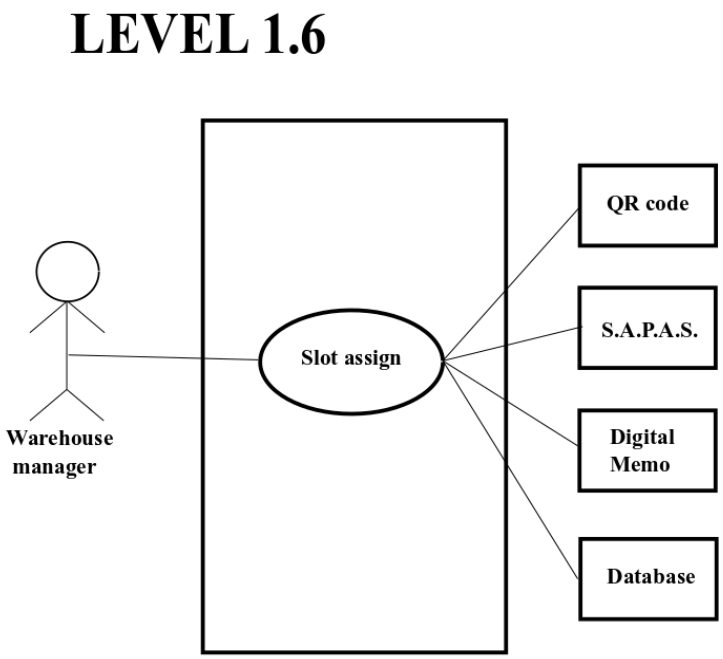
Description of the use case diagram

1. **Employee Dashboard:** Employees can see the status of their salary, overtime and pending tasks.
2. **Communicate in the workplace:** Employees can communicate with each other by chatting with one another and platform wide notices can be published here.
3. **Human Resource Allocation:** HR managers, after hiring employees, sign them into the platform by creating their account. They can allocate people to different departments and teams which can be managed and seen through this section.



LEVEL 1.6

Name: Warehouse Management
Primary Actors: Warehouse manager
Secondary Actors: S.A.P.A.S, QR code, Digital Memo, Database

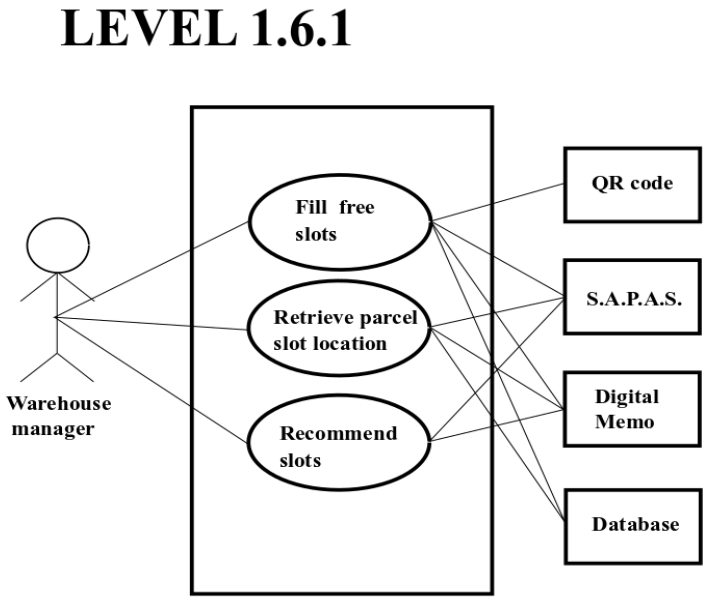


LEVEL 1.6.1

Name: Assigning Slot
Primary Actor: Warehouse Manager
Secondary Actor: QR Code, SAPAS, Digital Memo

Description of the Use Case Diagram

1. **Slot Assign:** This has three functionalities:
2. **Slot Filling:** Slots that are unoccupied in the warehouse are marked as filled after scanning a QR code assigned to the slot.
3. **Retrieve Parcel Slot Location:** locations of parcels are retrieved from their respective digital memos to fast-track parcel collection from the slots.
4. **Recommend Slots:** Slots are recommended for efficient retrieval in the future.

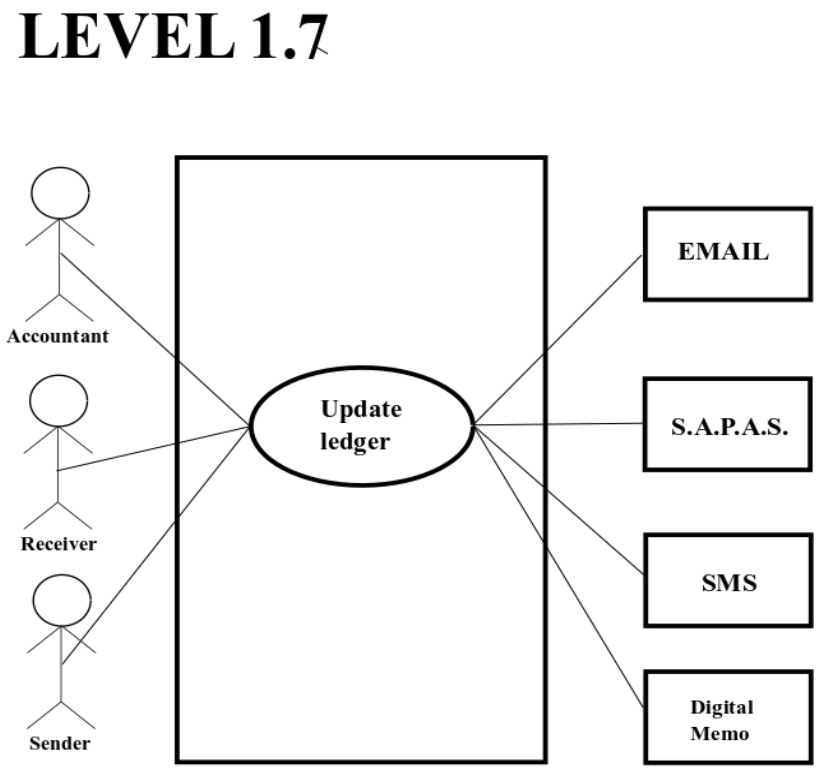


LEVEL 1.7

Name: Sending Money
Primary Actors: Accountant, Sender, Receiver
Secondary Actors: S.A.P.A.S, Email, SMS, Digital Memo

Description of the Use Case Diagram

1. **Update Ledger:** After the accountant receives the amount to be sent in cash they update the ledger with the digital memo which has the record of the amount received. Then a notice is sent to the destination branch that the cash has been received where another accountant, after verifying the receiver gives them the cash.

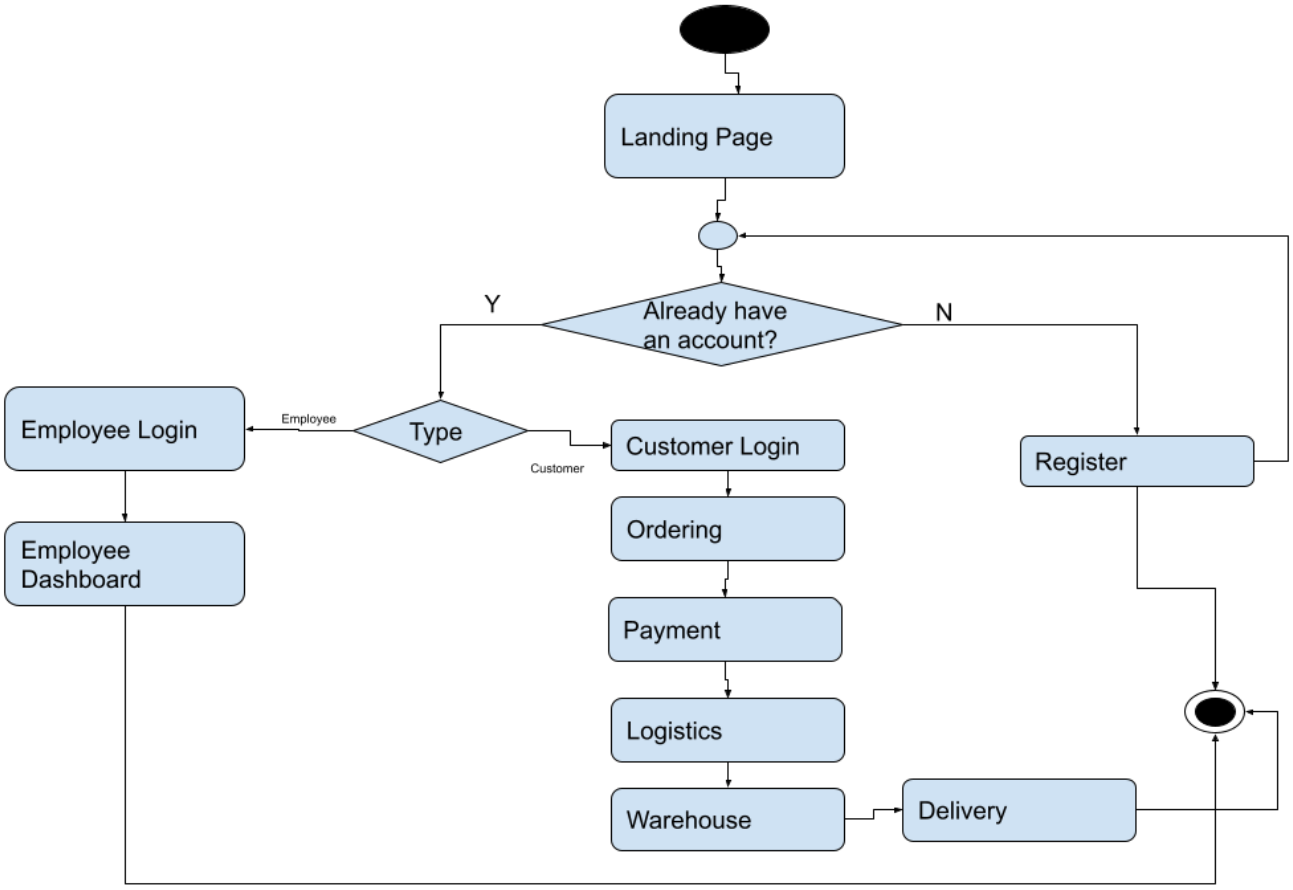


7. Activity Diagram (Assignment - 5)

Definition of Activity Diagram: Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration, and concurrency.

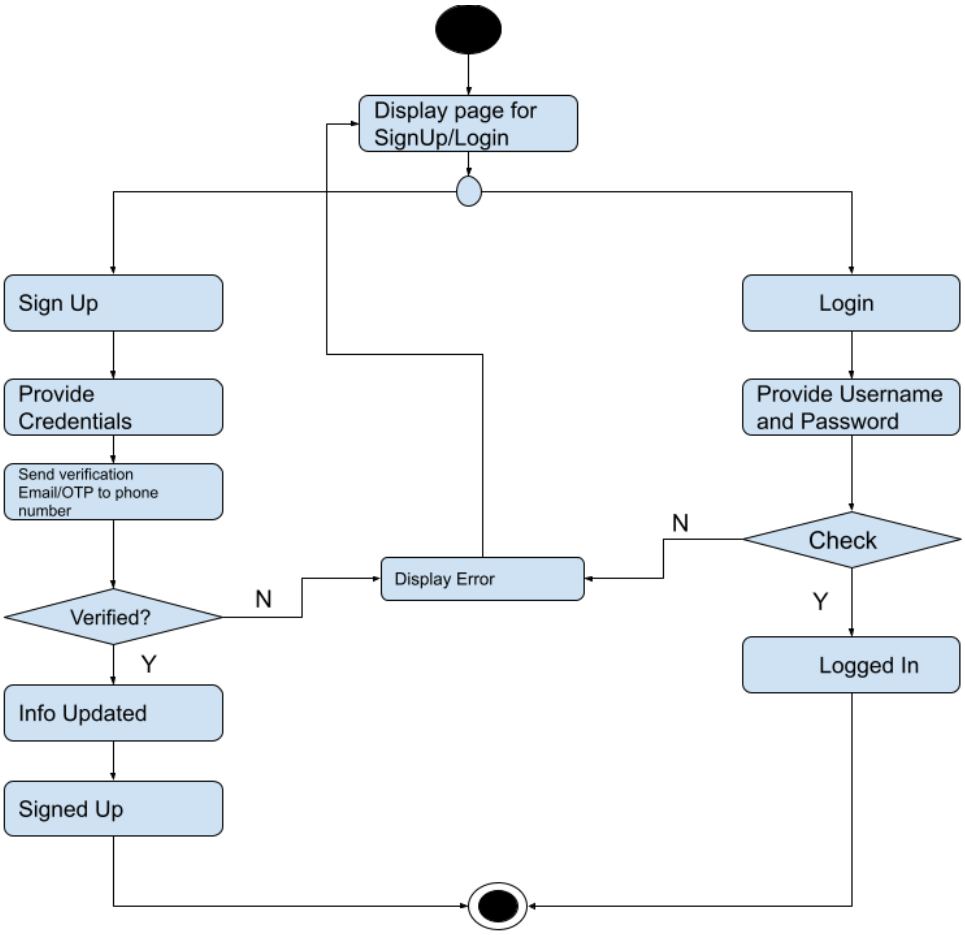
Level 1:

Name: SAPAS
Reference: Use Case level 1



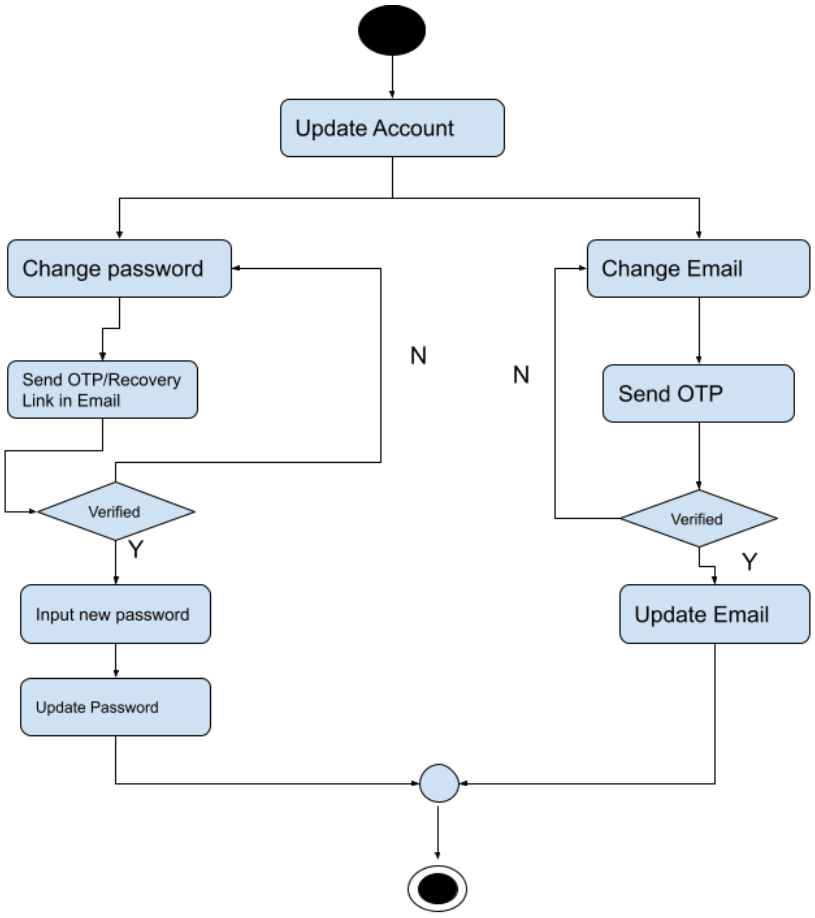
Level 1.1:

Name: Customer Account Management
Reference: Use case 1.1



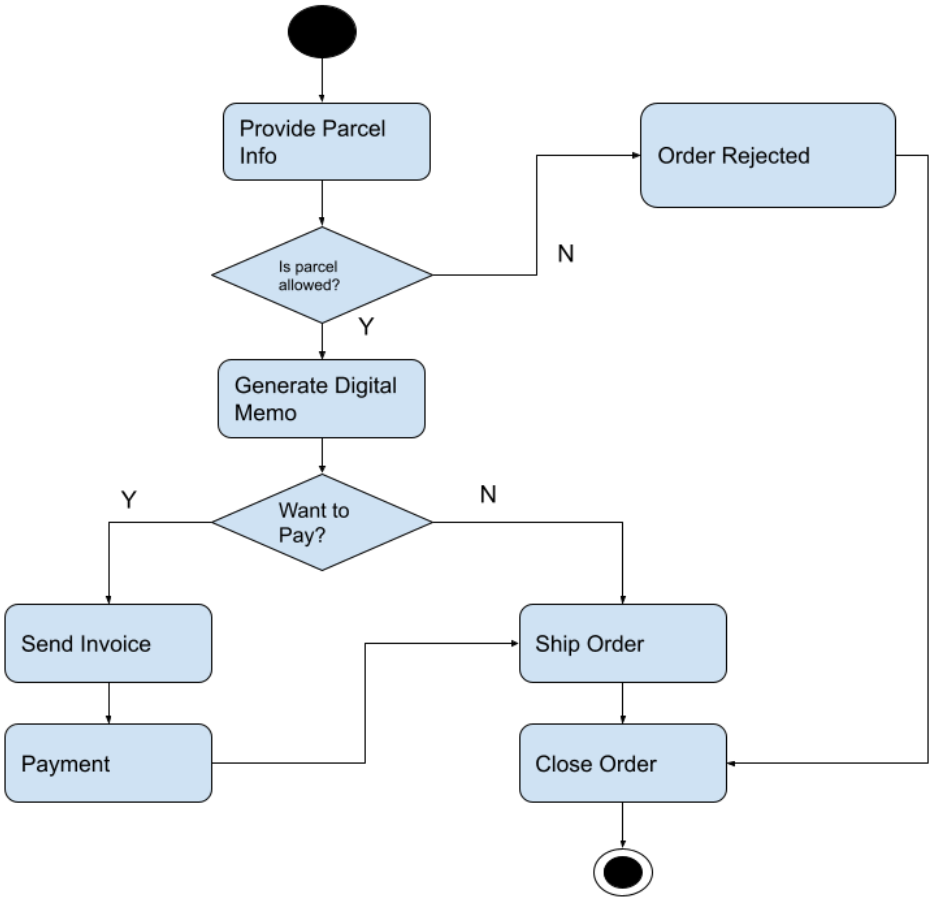
Level 1.1.1:

Name: Customer Account Update
Reference: Use case 1.1



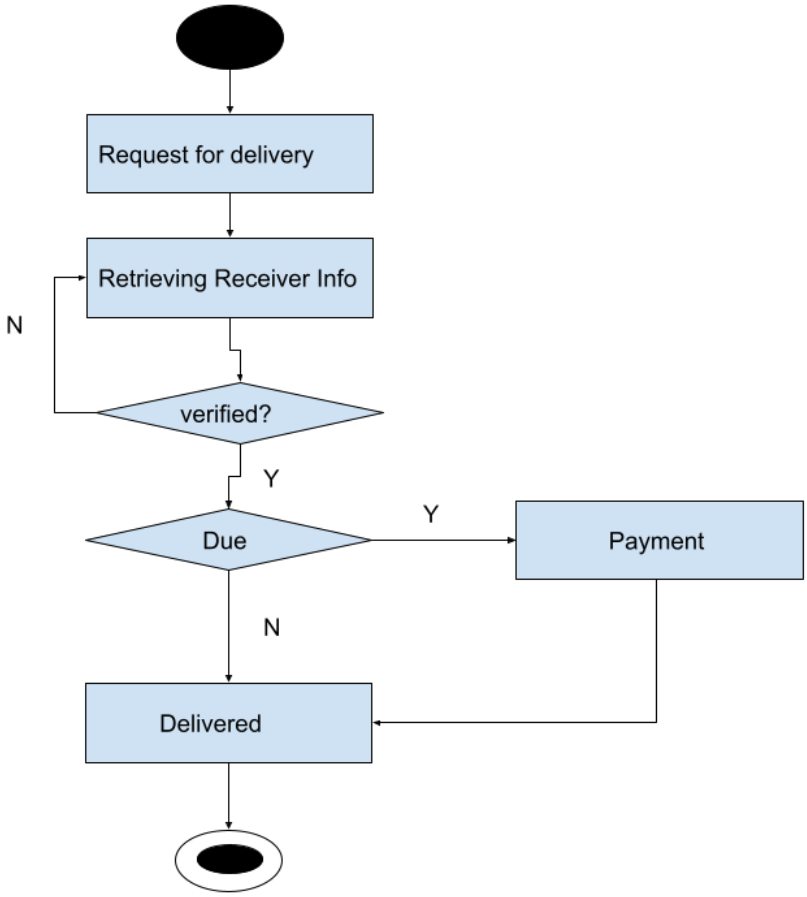
Level 1.2.1:

Name: Ordering
Reference: Use case 1.2



Level 1.2.2:

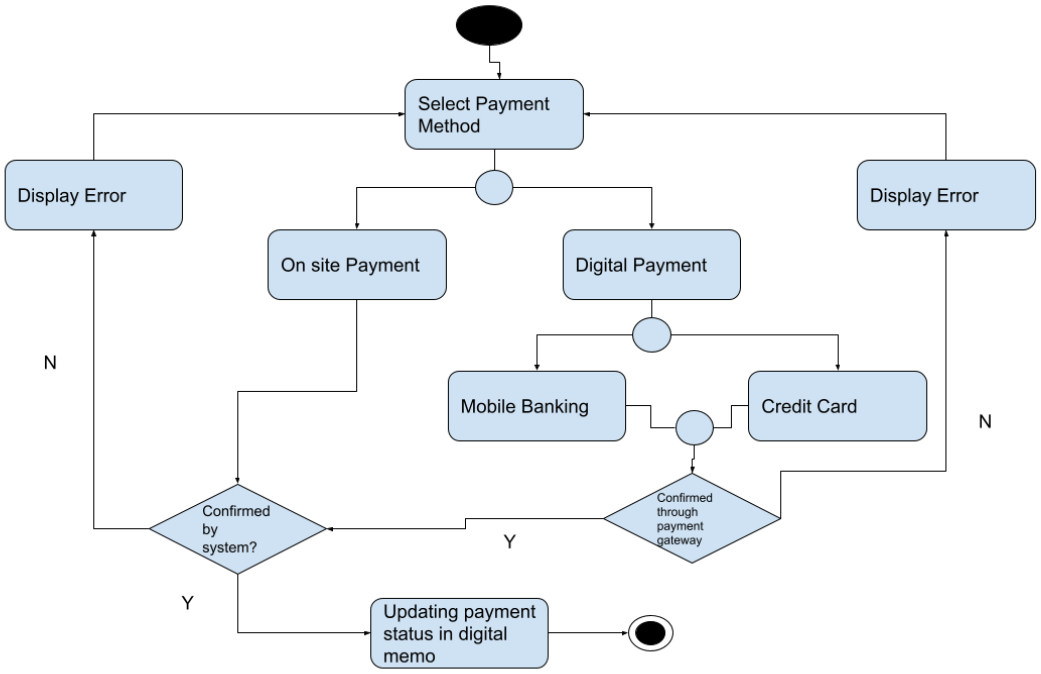
Name: Parcel delivery
Reference: Use case 1.2



Level 1.3:

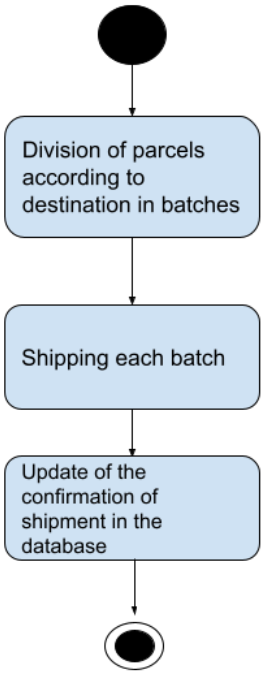
Name: Payment

Reference: Use case 1.3



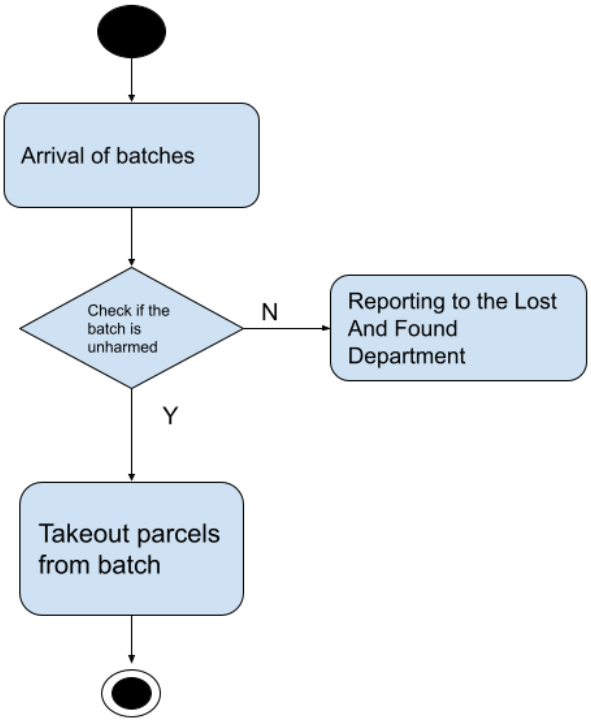
Level 1.4.1:

Name: Logistics_1(sender side)
Reference: Use case 1.4



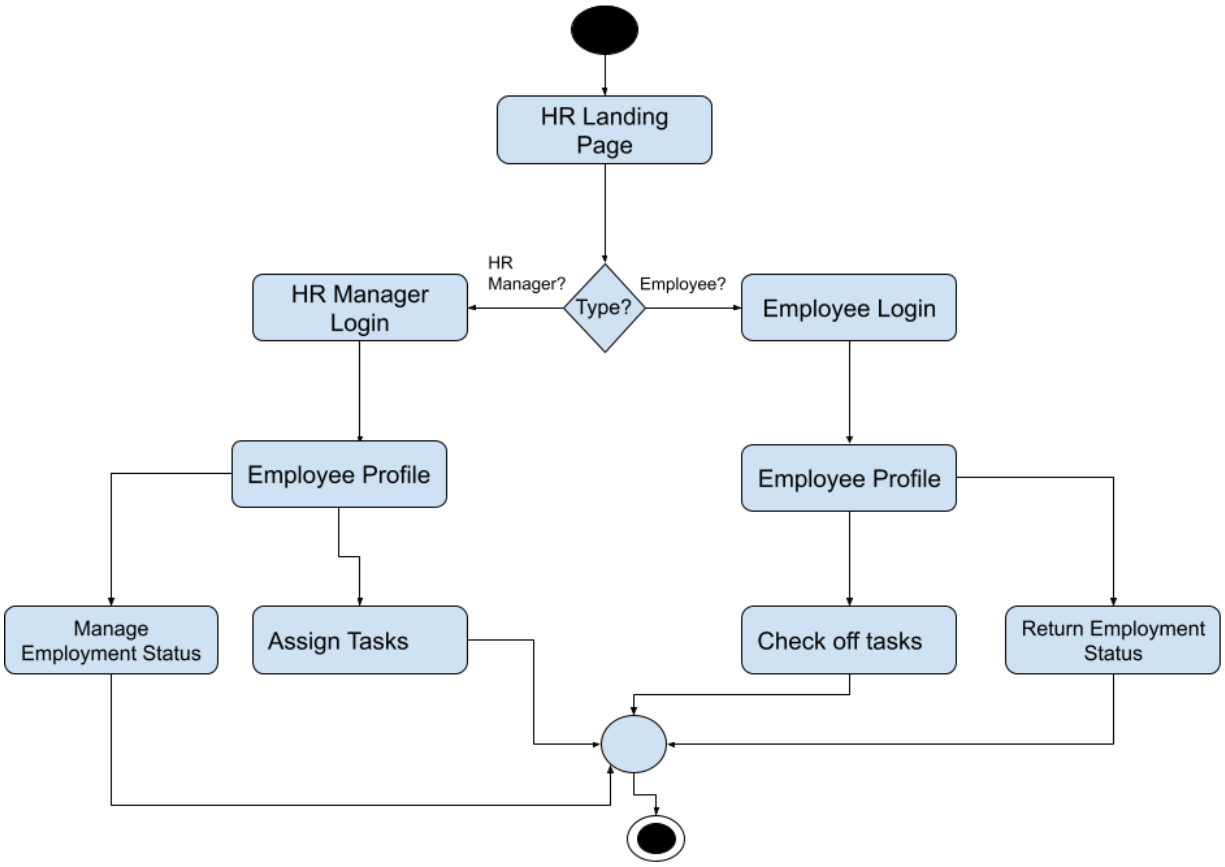
Level 1.4.2:

Name: Logistics_2(Receiver side)
Reference: Use case 1.4



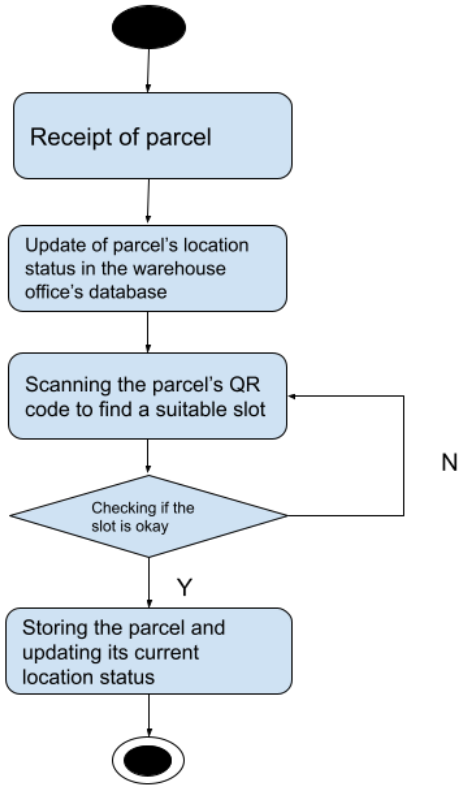
Level 1.5:

Name: HR Management
Reference: Use case 1.5



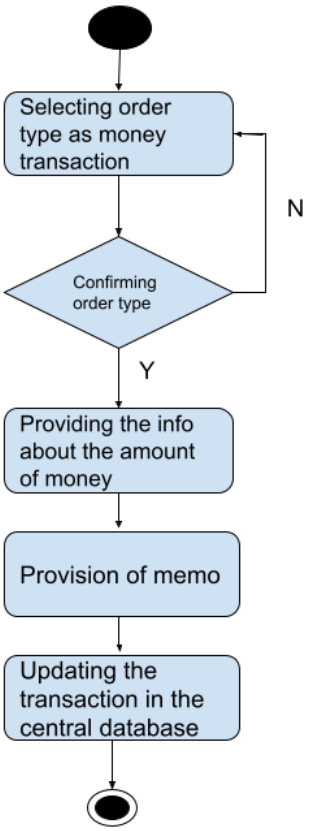
Level 1.6:

Name: Warehouse Management
Reference: Use case 1.6



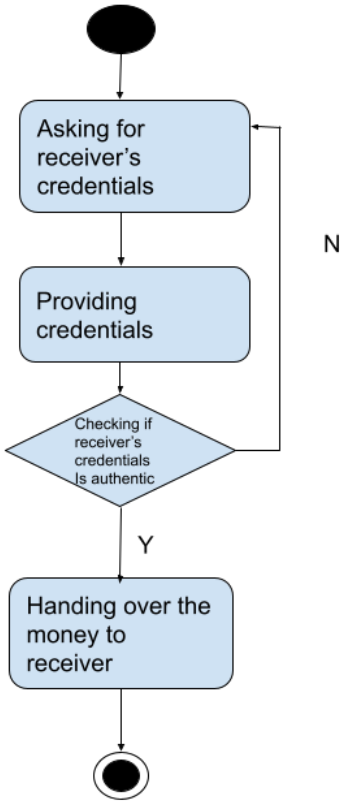
Level 1.7.1:

Name: Money Transaction_1(Sender side)
Reference: Use case 1.7



Level 1.7.2:

Name: Money Transaction_2(Receiver side)
Reference: Use case 1.7

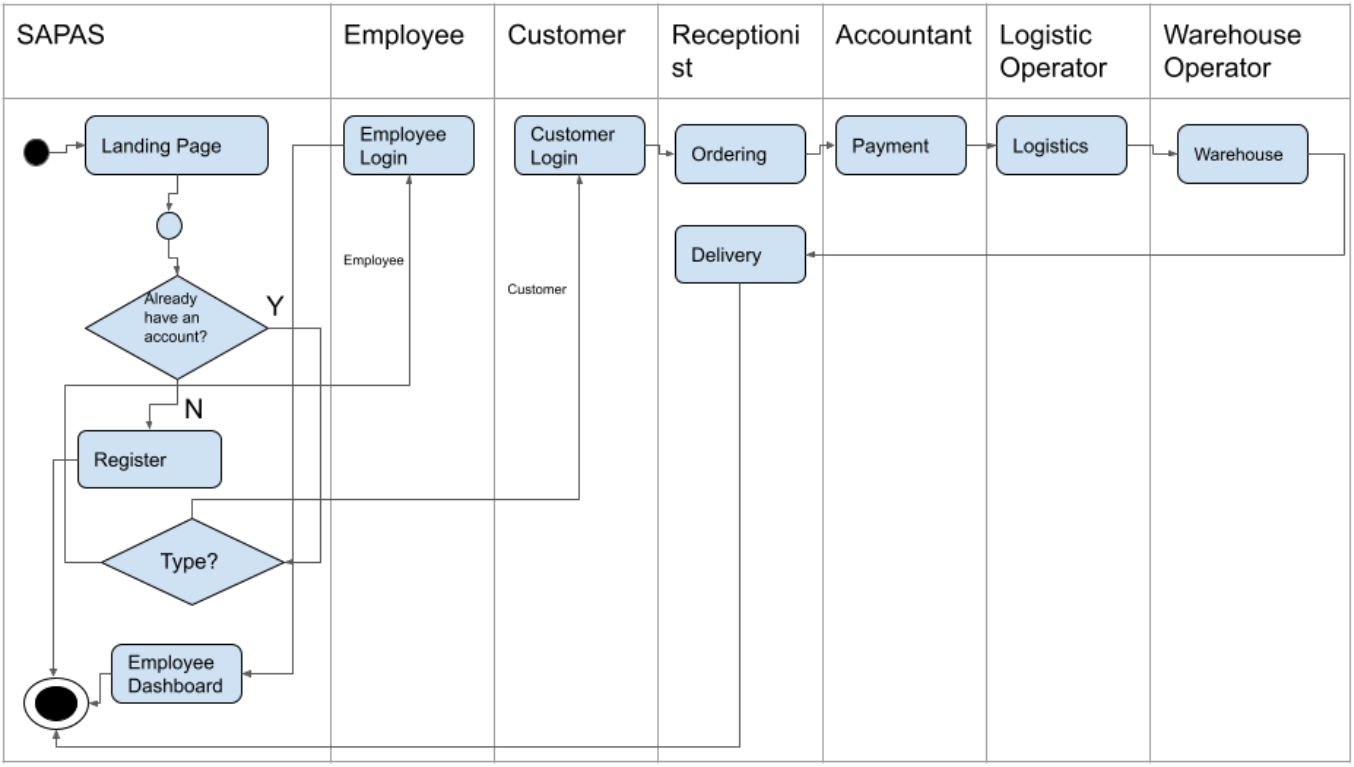


8. Swimlane Diagram (Assignment - 6)

Definition: A swimlane diagram is a type of flowchart that delineates who does what in a process. Using the metaphor of lanes in a pool, a swimlane diagram provides clarity and accountability by placing process steps within the horizontal or vertical "swimlanes" of a particular employee, workgroup, or department. It shows connections, communication, and handoffs between these lanes, and it can serve to highlight waste, redundancy, and inefficiency in a process.

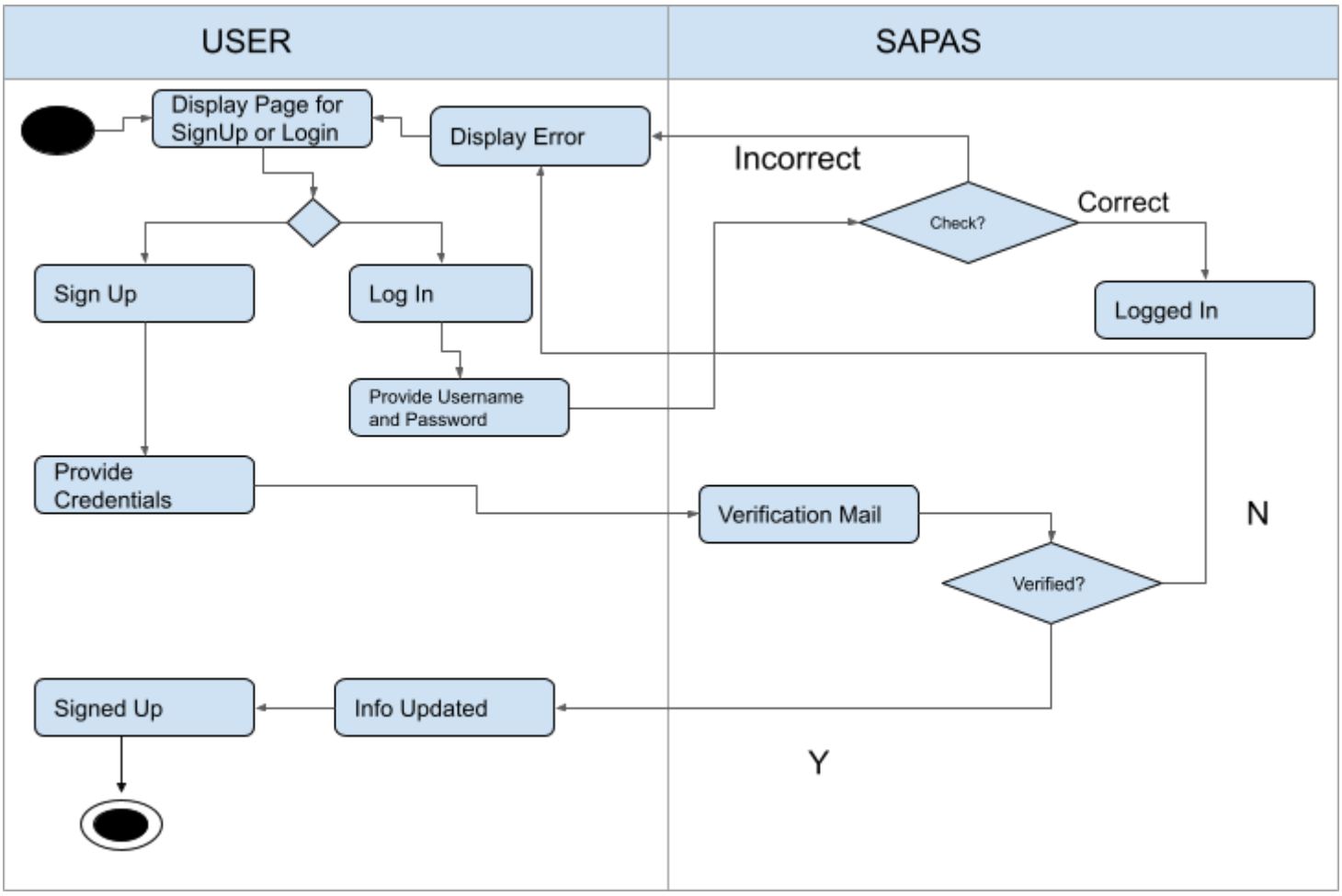
Level 1

Name: SAPAS
Reference: Use case and Activity diagram 1



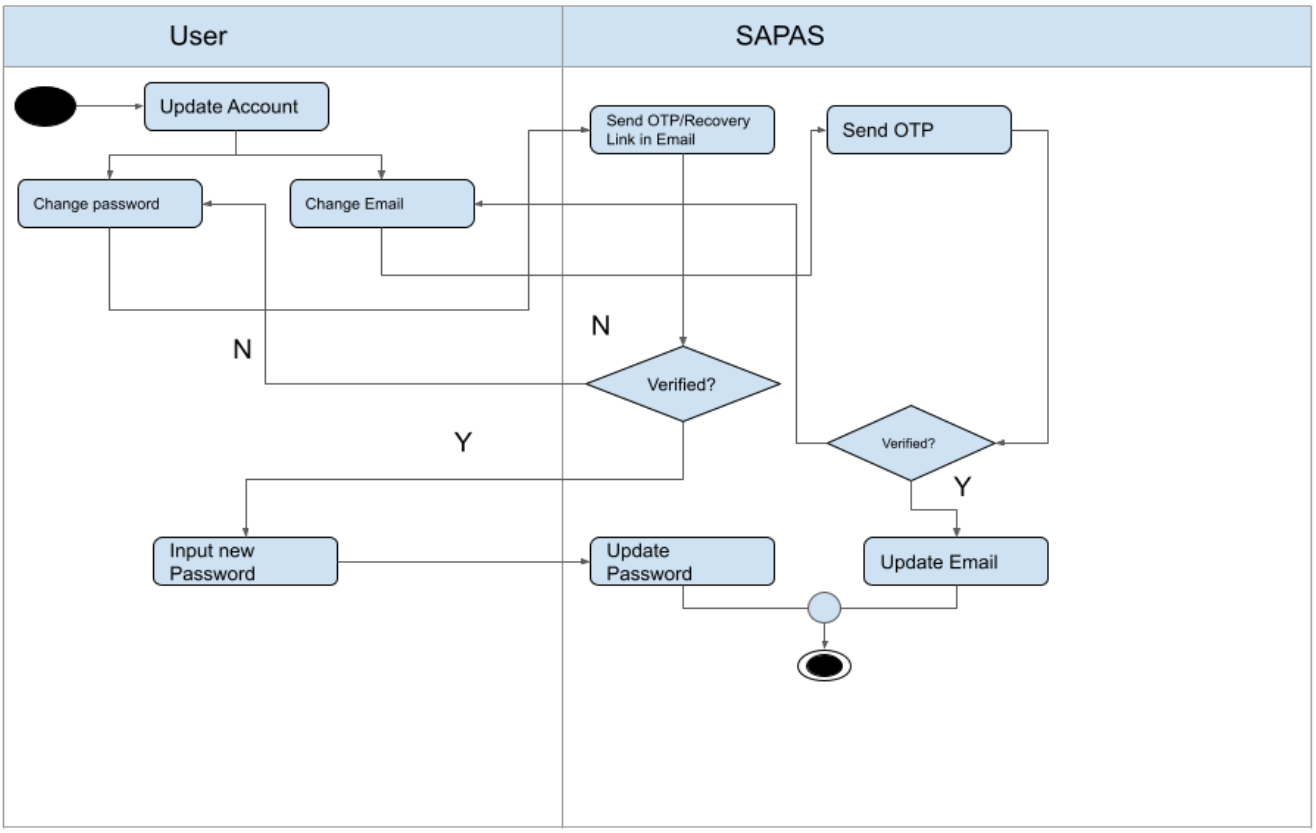
Level 1.1

Name: Customer Account Management
Reference: Use case and Activity diagram 1.1



Level 1.1.1

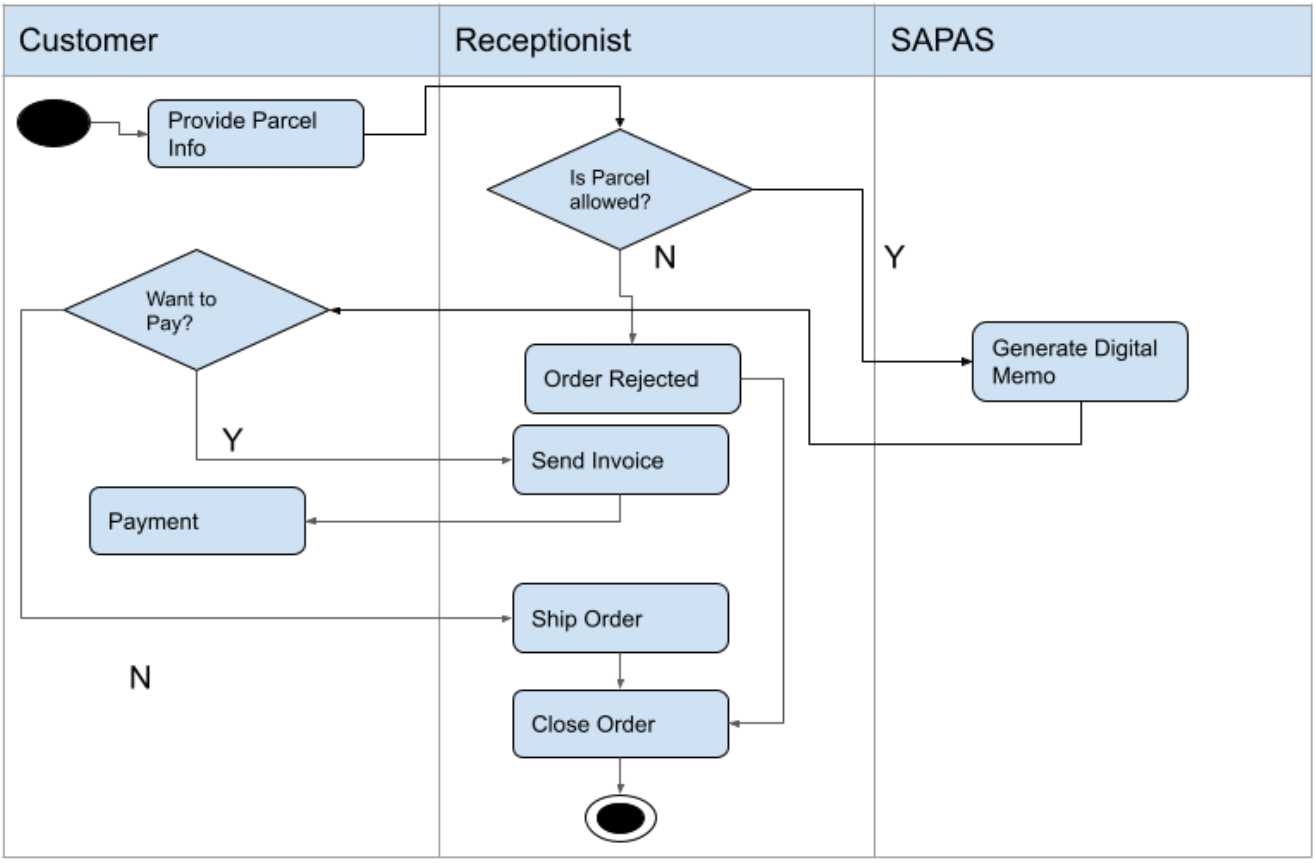
Name: Customer Account Update
Reference: Use case and Activity Diagram 1.1



Level 1.2

Name: Ordering

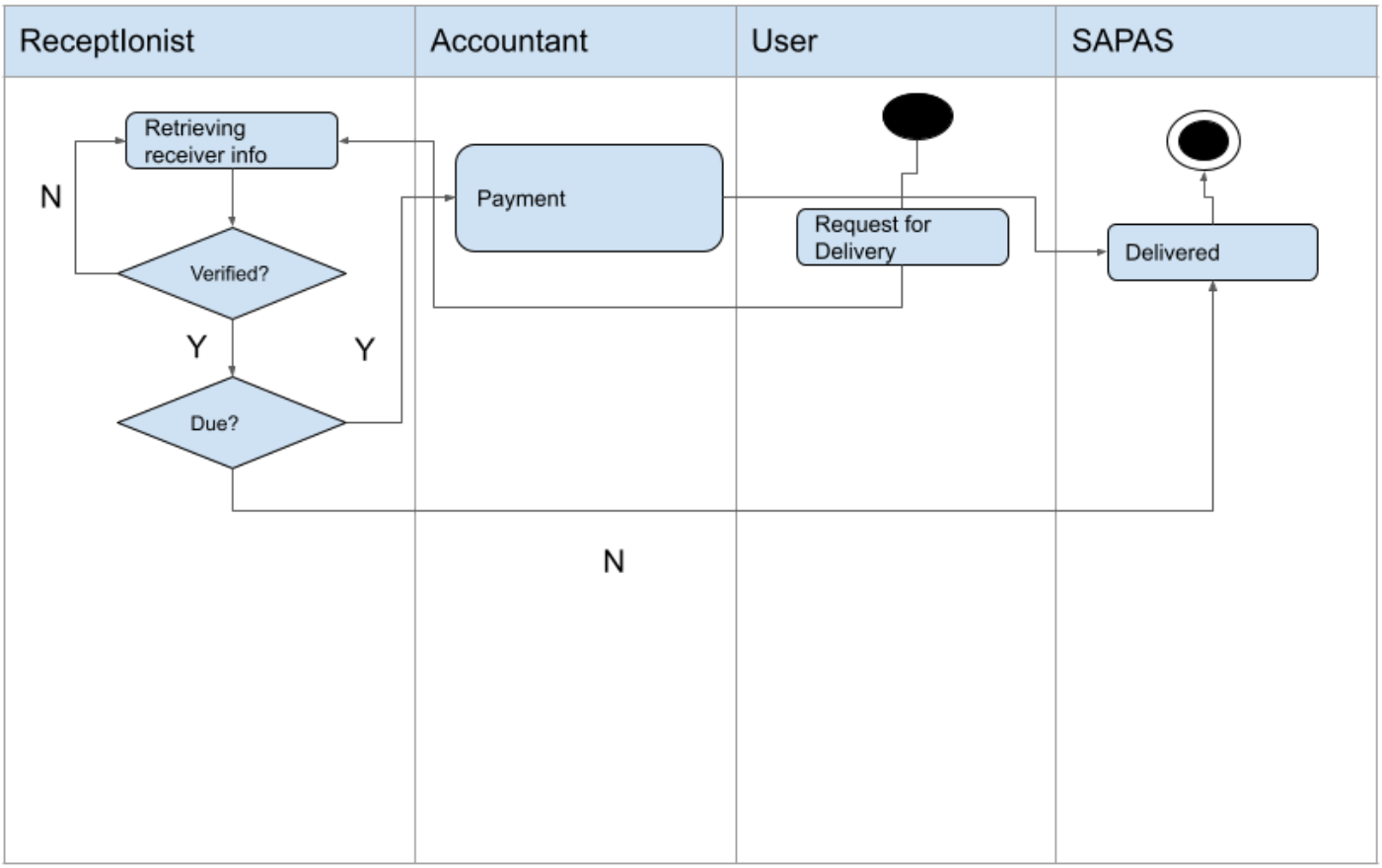
Reference: Use case 1.2



Level 1.3.1:

Name: Parcel delivery

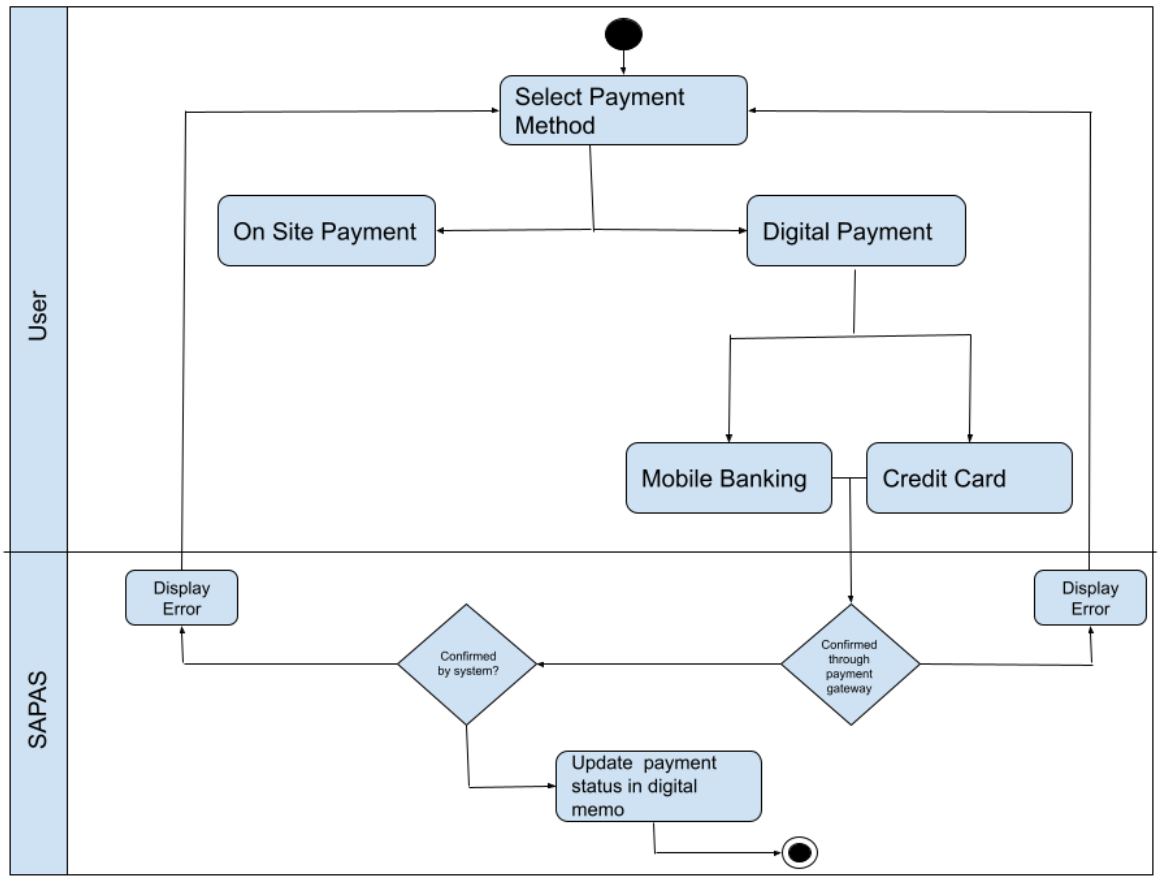
Reference: Use case and activity diagram 1.3



Level 1.3.2:

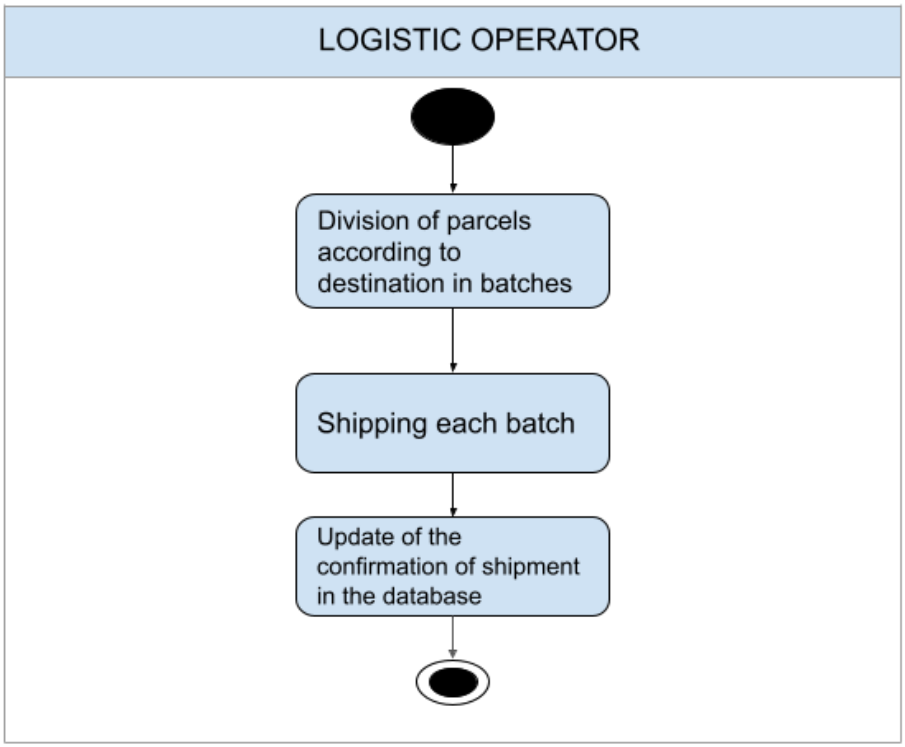
Name: Payment

Reference: Use case and activity diagram 1.3



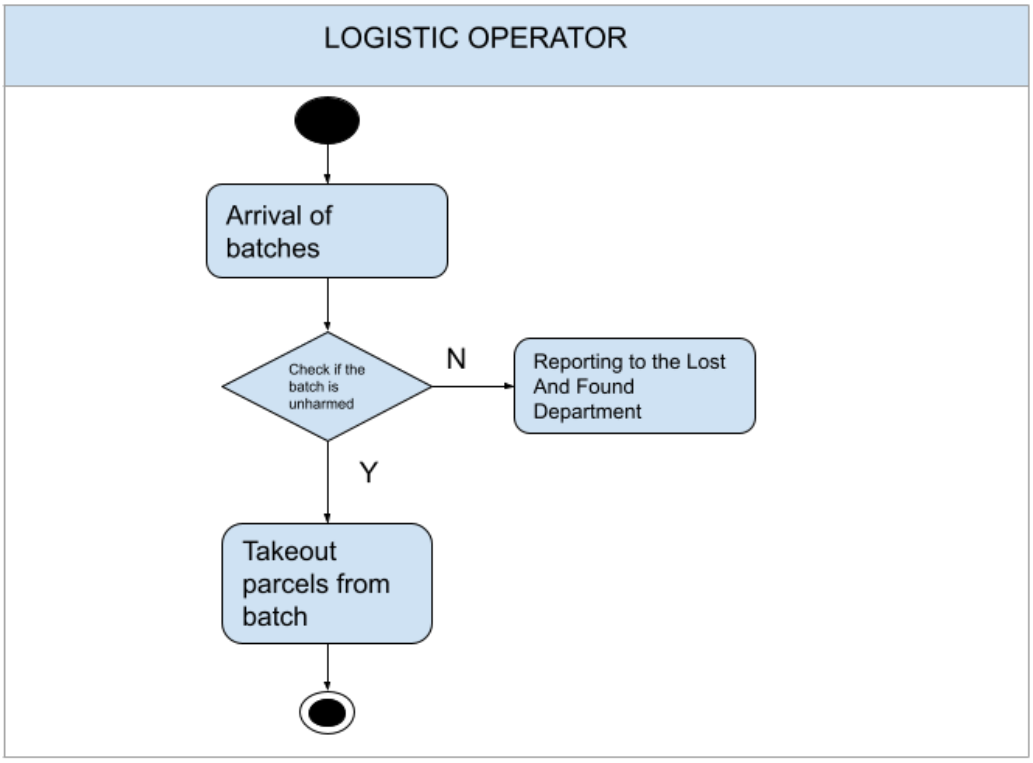
Level 1.4.1

Name: Logistics_1(Sender side)
Reference: Use case 1.4 and activity diagram 1.4.1



Level 1.4.2

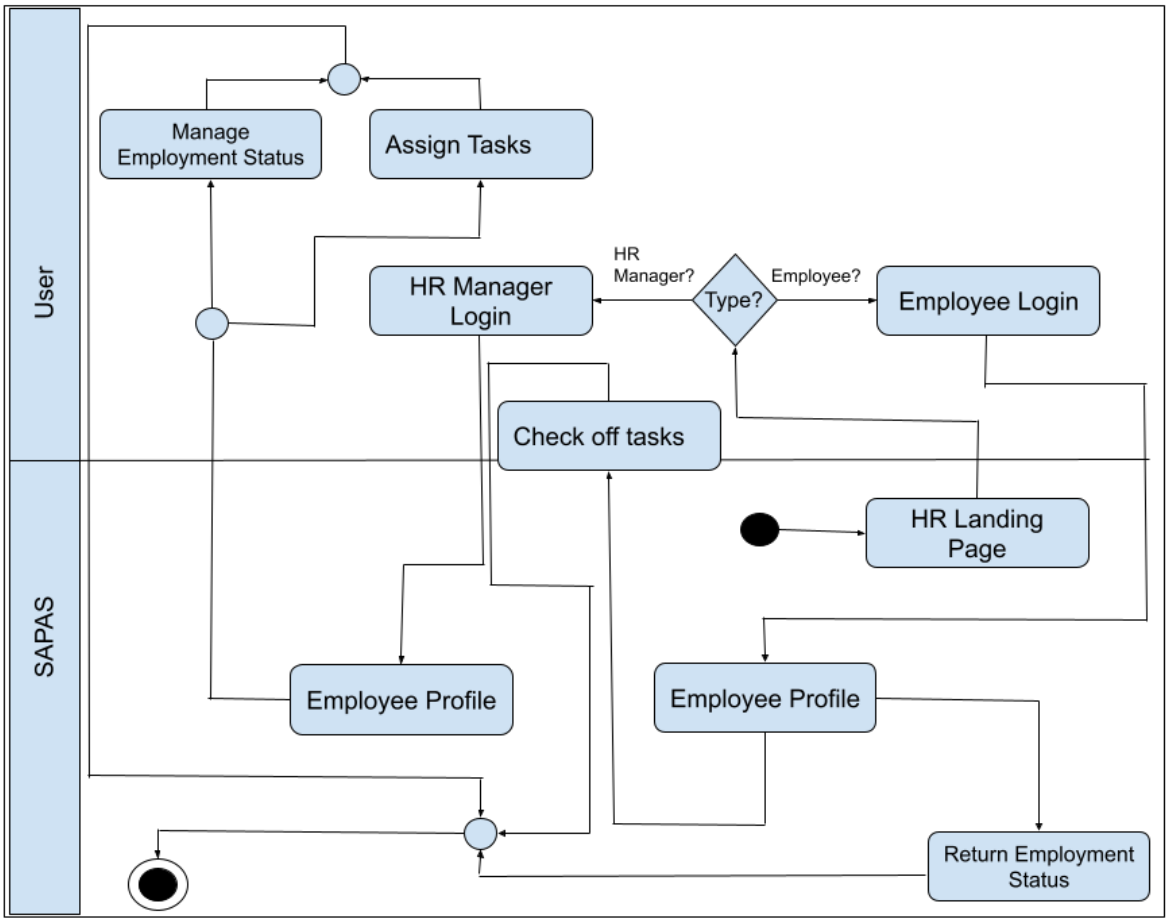
Name: Logistics_2(Receiver side)
Reference: Use case 1.4 and activity diagram 1.4.2



Level 1.5

Name: HR Management

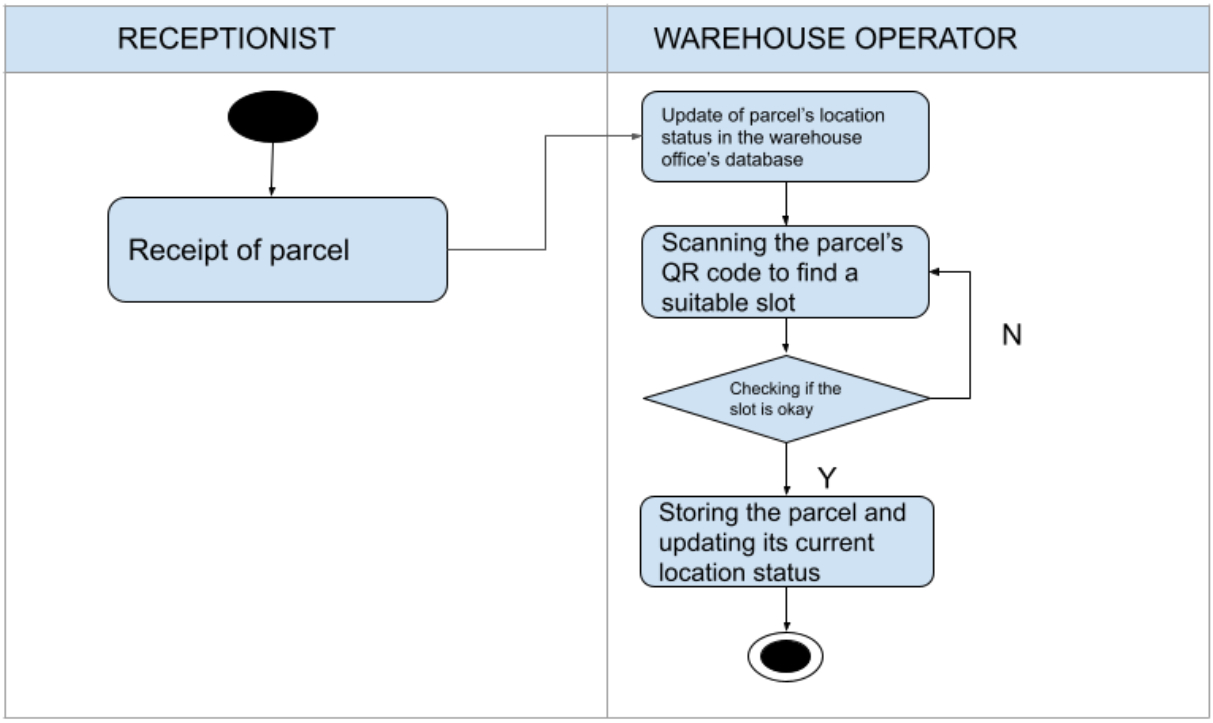
Reference: Use case 1.5 and activity diagram 1.5



Level 1.6

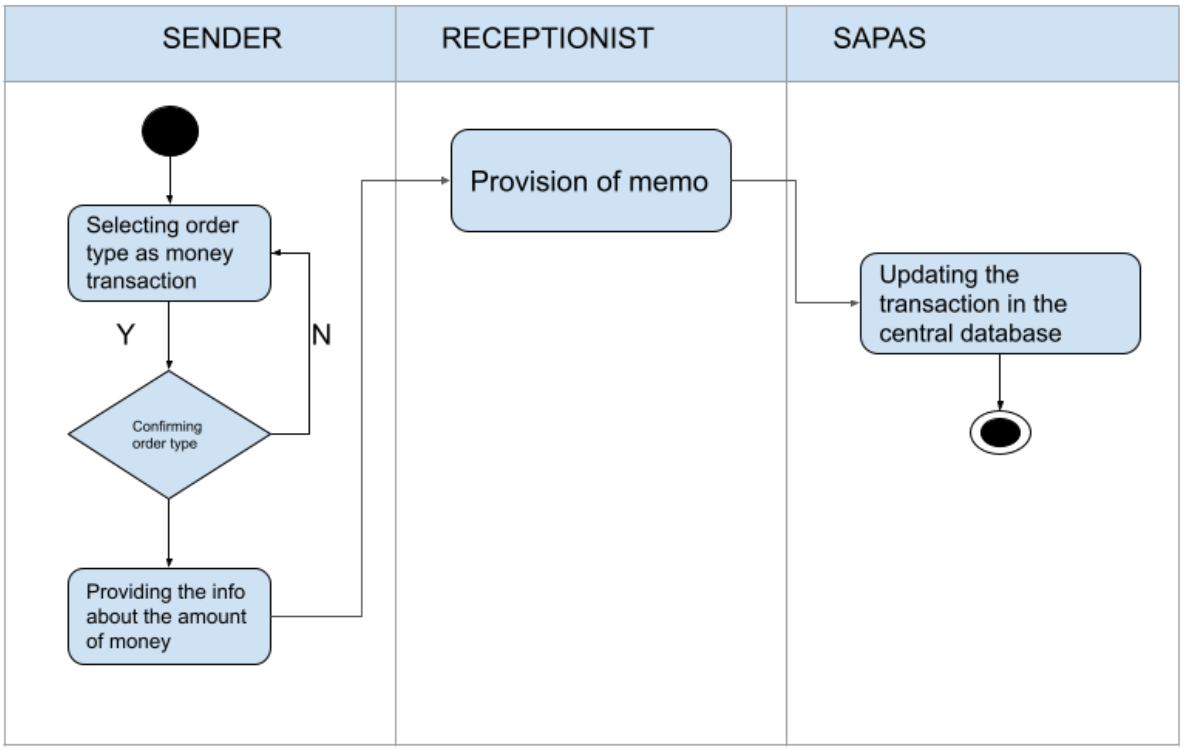
Name: Warehouse Management

Reference: Use case 1.6 and activity diagram 1.6



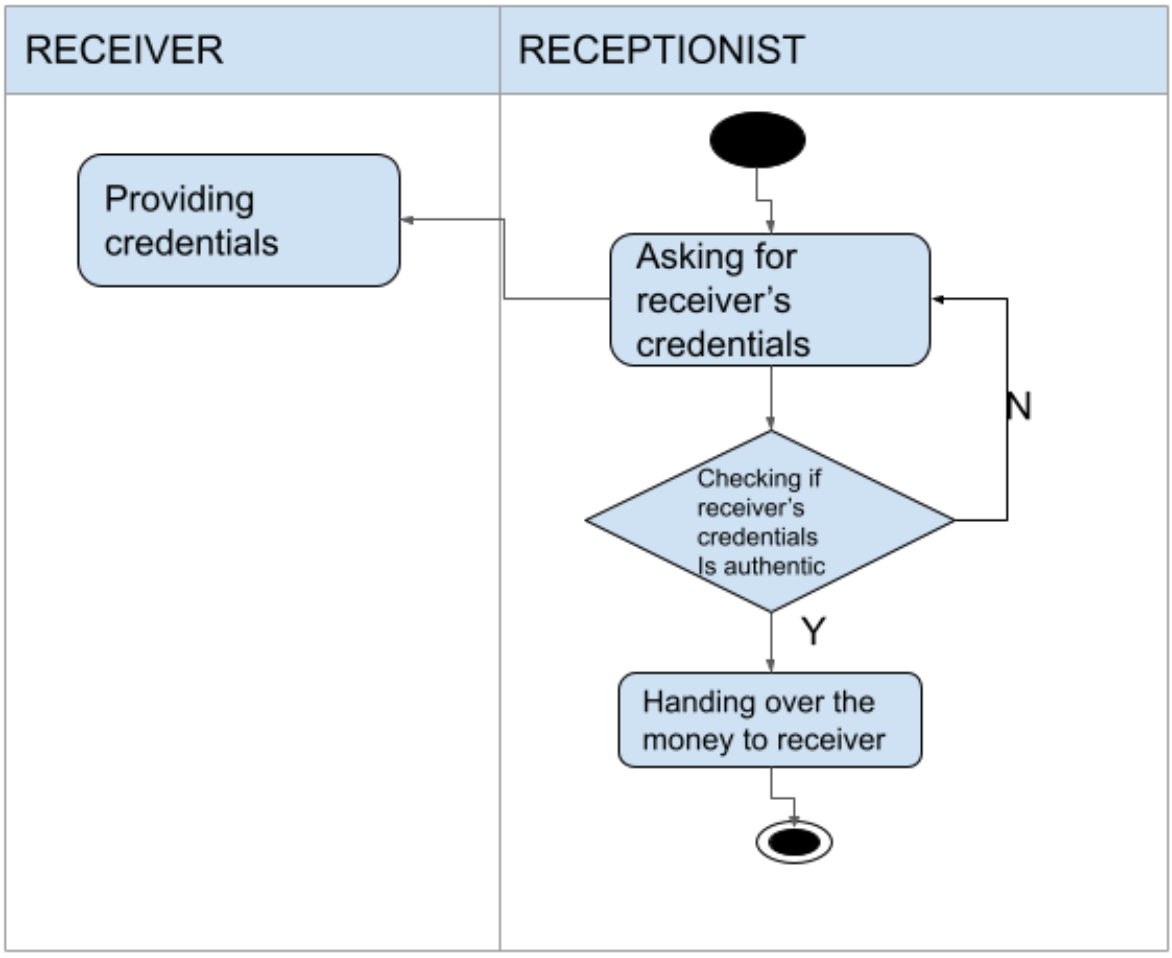
Level 1.7.1

Name: Money Transaction_1(Sender side)
Reference: Use case 1.7 and activity diagram 1.7.1



Level 1.7.2

Name: Money Transaction_2(Receiver side)
Reference: Use case 1.7 and activity diagram 1.7.2



9. Data-Based Modelling (Assignment - 7)

Data Modeling Concept :

If software requirements include the necessity to create, extend or interact with a database or complex data structures need to be constructed and manipulated, then the software the team chooses to create data models as part of overall requirements modeling. The entity-relationship diagram (ERD) defines all data objects that are processed within the system, the relationships between the data objects, and the information about how the data objects are entered, stored, transformed, and produced within the system.

Data Objects:

A data object is a representation of composite information that must be understood by the software. Here, composite information means information that has a number of different properties or attributes. A data object can be an external entity, a thing, an occurrence, a role, an organizational unit, a place, or a structure.

9.1. Data Object Identification:

Serial	Noun	Problem(P)/Solution (S) space	Attribute
1	S.A.P.A.S	s	12, 18, 19, 20, 21, 22, 23, 24, 27, 28, 29, 95, 96, 97, 98, 102
2	Account	p	
3	Customer	s	4, 5, 6, 7, 8, 9, 10, 55
4	Name	s	
5	User handle	s	
6	Profile picture	s	
7	Email address	s	
8	Resident address	s	
9	User handle	s	
10	Password	s	
11	OrderID	s	

12	Delivery	s	43, 44, 45
13	Receptionists	s	95, 96, 97, 98, 102, 10
14	System	p	
15	HR Manager ID	s	
16	Employee ID	s	
17	HR subsystem	p	
18	Digital memo	s	19, 20, 21, 22, 23, 24, 27, 28, 29, 12
19	Customer name	s	
20	Phone number	s	
21	Email address	s	
22	Delivery address	s	
23	Receiver phone number	s	
24	Payment	s	49, 50, 51, 52, 53, 57
25	Cash payment	s	
26	Digital payment	s	
27	Delivery person	p	
28	Receiver	s	
29	Order	s	11,33,35,41,43,44,45
30	Platform	p	
31	Parcel	p	
32	Receptionist	s	
33	Order criteria	s	
34	Order weight	s	
35	Order category	s	34,36,37,38,39,40,42

36	Parcel	s	
37	Money	s	
38	Documents	s	
39	Delicate goods	s	
40	Emergency	s	
41	Delivery batch time	s	
42	Non-emergency	s	
43	Delivery id	s	
44	Transaction date	s	
45	Transaction time	s	
46	Dashboard	s	
47	Database	s	
48	Partial payment	s	
49	Digital payment	s	
50	Cash payment	s	
51	Online banking system	s	
52	BKASH,NAGAD, Rocket,U-cash	s	
53	SSLCOMMERZ	s	
54	Transaction history	s	
55	Customer Order Profile	s	
56	Printed memo	p	
57	Online payment	s	
58	warehouse operations	p	

59	warehouse management systems	p	
60	warehouse workers	p	
61	task history	s	
62	batches	p	
63	batch ID	s	
64	order ID	s	
65	Batch information	s	61, 67, 68, 69
66	Transport registration number	s	
67	Driver's employee id	s	
68	Batch Destination.	s	
69	Date	s	
70	logistical operators	s	95,96,97,98,102,103,61,67,68,69,65
71	shipment	p	
72	central database	s	
73	branch office	p	
74	distribution office	p	
75	QR code	s	
76	customer	p	
78	Wirehouse map	s	
79	location status	s	
80	wirehouse database	s	77,78,79,82,
81	wirehouse operators	s	77,78,79,82,95,96,97,98,102,103

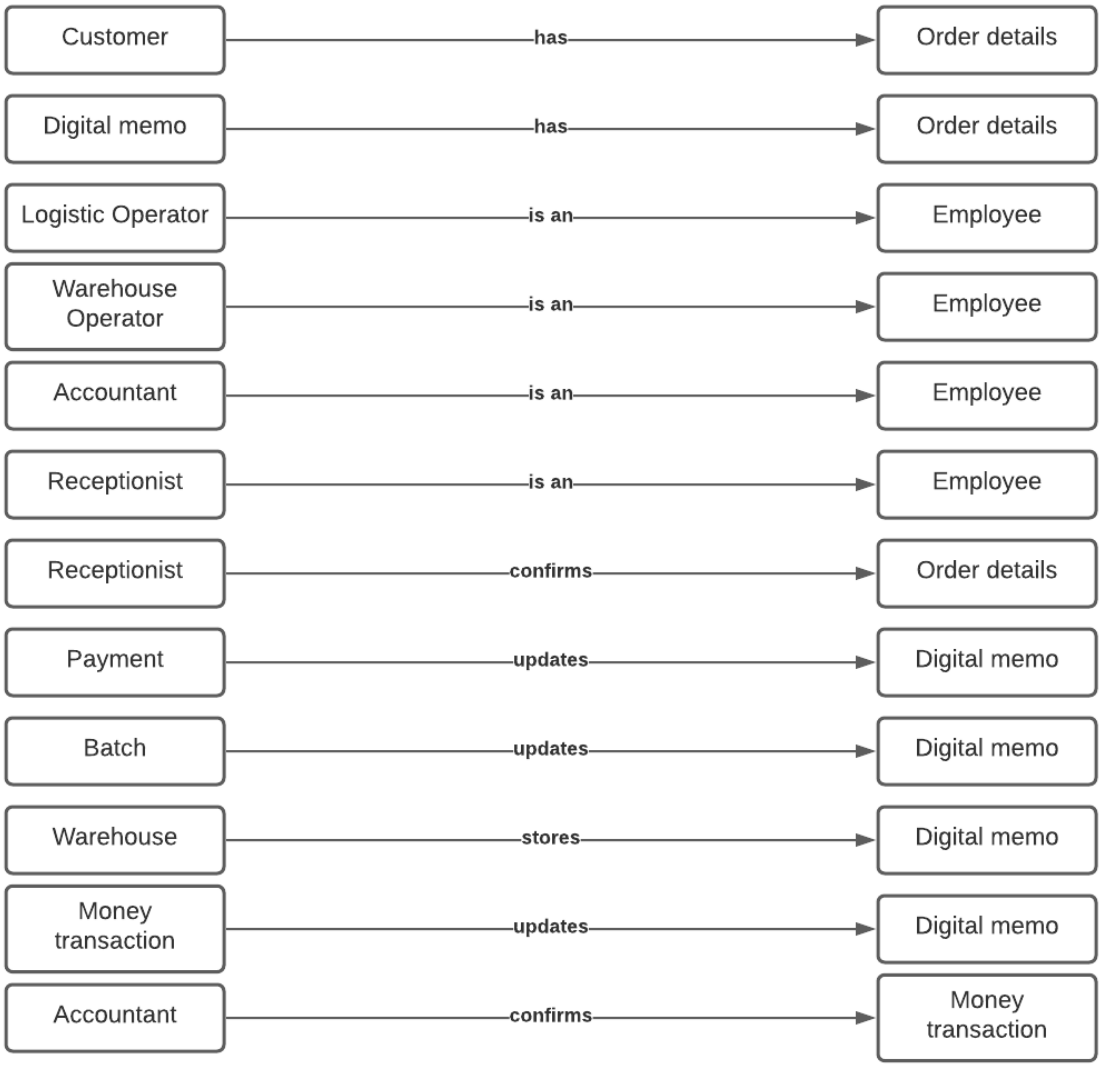
82	scanning device	s	
83	Location slot	s	
84	accountants	s	95,96,97,98,102,103,86,90,89,88,87,86,49,50,51,52,53,57
85	transactionID	s	
86	memo	s	
87	sender	s	
88	receiver	s	
89	source branch office	s	
90	destination branch office	s	
91	Money transaction database	s	90,89,88,87,86
92	Money transaction	p	
93	HR manager	s	95,96,97
94	Employee	s	95,96,97,98,102,10
95	name	s	
96	Contact details	s	
97	designation	s	
98	Working hours	s	
99	salary	s	100,101
100	Basic amount	s	
101	Active bonus	s	
102	Transaction information	s	
103	Service duration	s	

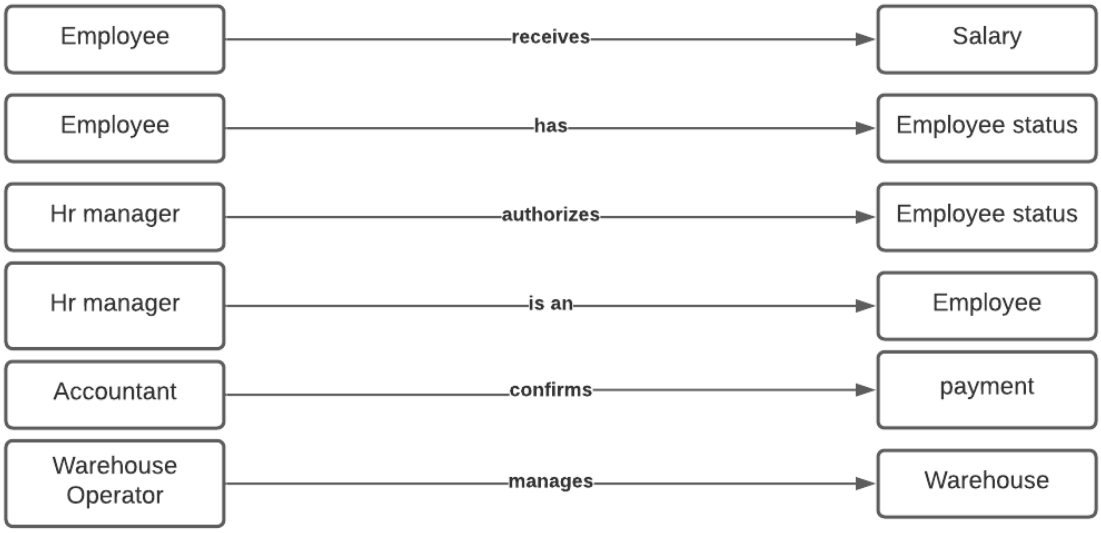
104	Service location	s	
105	Employee management	p	
106	Labor management system	p	
107	Planning and scheduling capabilities	p	
108	history of activities	s	
109	Labor cost	s	
110	productivity	p	

9.2. Final data object :

1. SAPAS
2. Customer
3. Digital Memo
4. Order
5. Order Category
6. Payment
7. Receptionist
8. Accountant
9. Warehouse Operator
10. Logistic Operator
11. Batch Information (logistic)
12. Warehouse Database
13. Money Transaction
14. Employee
15. Salary
16. HR manager
17. Delivery

9.3. Data Object Relationship:

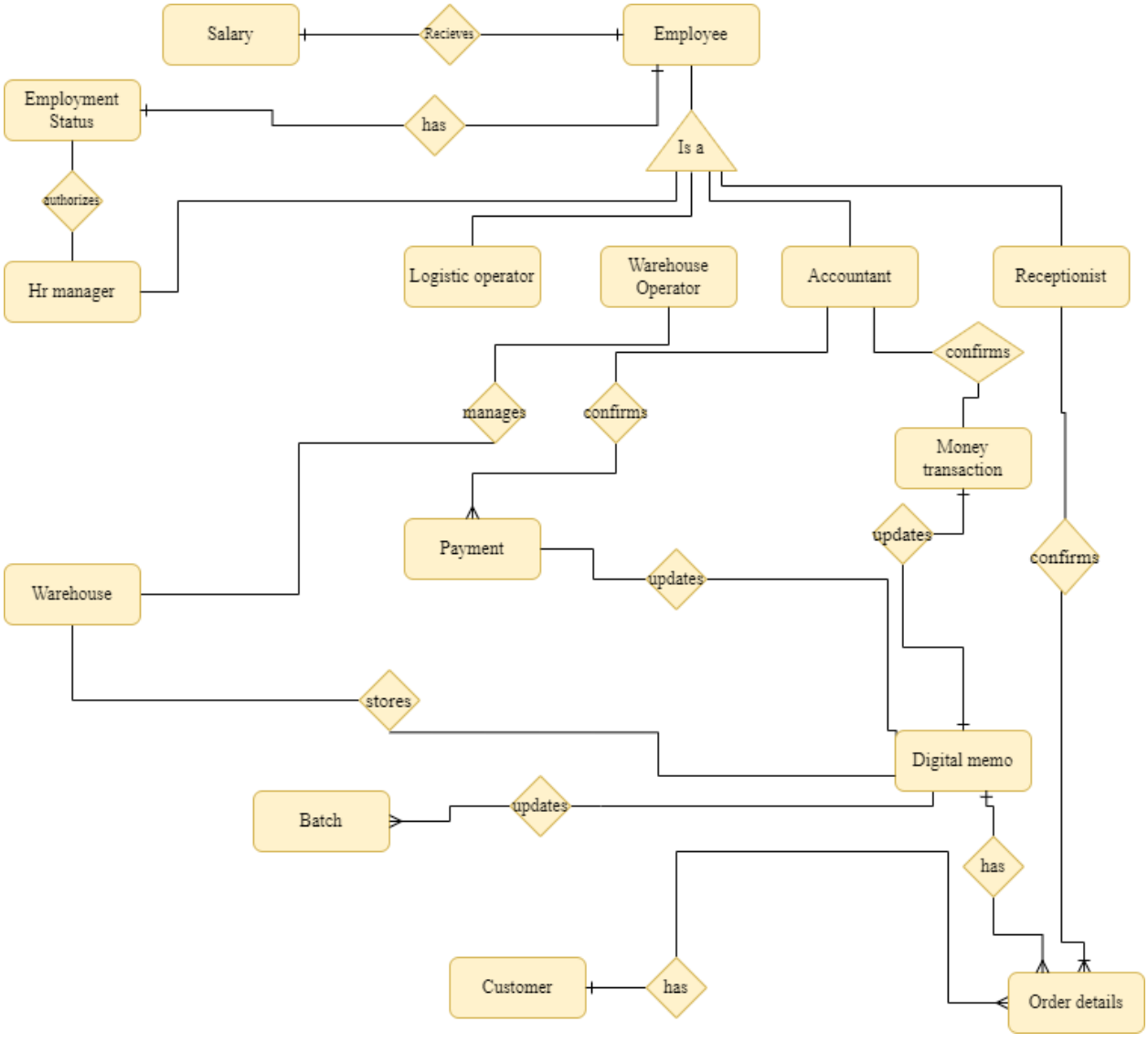



Employee
receives
Salary
Employee
has
Employee status
Hr manager
authorizes
Employee status
Hr manager
is an
Employee
Accountant
confirms
payment
Warehouse Operator
manages
Warehouse

9.4. ER Diagram

Definition of ER Diagram: An Entity-Relationship (ER) Diagram is a type of flowchart that illustrates how “entities” such as people, objects, or concepts relate to each other within a system.

ER diagram of SA Paribahan Automated System



9.5. Schema Diagram:

Data Object	Attribute	Type	Size
Customer	-name -user id -profile picture -email address -resident address -password	Varchar Number Image Varchar Varchar Varchar	40 10 40 100 40
Digital memo	-memo id -user_id -phone number -email address -delivery address -transaction id -receiver name -receiver phone number -delivery person -batch id -Warehouse id	Number Number Varchar Varchar Number Varchar Number Varchar Number Number	40 10 40 40 10 40 10 40 10 10
Order details	-Memo id -Customer id -Order id -Order weight -Order type -is_emergency -receptionist id	Number Number Number number varchar bit Varchar	10 10 10 10 40 2 40
Payment	-Transaction id -Digital payment -Cash Payment -Online banking system -Online payment	Varchar Varchar Varchar Varchar Varchar	40 40 40 40 40
Batch information (logistic)	-Batch ID -driver's Phone Number -batch destination -date	Number Number Varchar Date & Time	10 11 40 20

Warehouse database	-wirehouse map -location status -WarehouseID -scanning device	Varchar Varchar Number Varchar	40 40 10 40
Money transaction	-Money transaction ID -sender -receiver -source branch office -destination branch office	Varchar Varchar Varchar Varchar Varchar Varchar	40 100 40 40 40 40
Employee	-Employee id -name -password -designation -contact -working hours -transaction information -active bonus -Bank info	number Varchar Varchar Varchar Number Varchar Varchar Varchar Number Varchar	10 40 40 40 11 100 10 100 10 40
HR manager	-Employee id -Manager id -password -designation -contact	Varchar Varchar Varchar Varchar Number	40 40 40 100 11

10. Class-Based Modeling (Assignment - 8)

Class Based Modeling Concept: Class-based modeling represents the objects that the system will manipulate, the operations that will be applied to the objects, relationships between the objects and the collaborations that occur between the classes that are defined.

10.1. List of Nouns :

Serial	Noun
1	Customer
2	Name
3	User handle
4	Profile picture
5	Email address
6	Resident address
7	Description
8	Password
9	OrderID
10	Delivery
11	HR Manager
12	Digital memo
13	Customer name
14	Phone number
15	Email address
16	Delivery address
17	Receiver phone number

18	Payment
19	Cash payment
20	Digital payment
21	Receiver
22	Order
23	Receptionist
24	Employee
25	Order criteria
26	Order weight
27	Order category
28	Parcel
29	Money
30	Documents
31	Delicate goods
32	Emergency
33	Delivery batch time
34	Non-emergency
35	Delivery id
36	Transaction date
37	Transaction time
38	Dashboard
39	Database
40	Partial payment
41	Digital payment
42	Cash payment

43	Online banking system
44	BKASH,NAGAD, Rocket,U-cash
45	SSLCOMMERZ
46	Transaction history
47	Customer Order Profile
48	Printed memo
49	Online payment
50	Warehouse operators
51	task history
52	batches
53	batch ID
55	order ID
56	Batch information
57	Transport registration number
58	Driver’s employee id
59	Batch Destination.
60	Date
61	logistical operator
62	central database
63	QR code
64	Warehouse map
65	location status
66	wirehouse database
67	scanning device

68	Location slot
69	accountant
70	transactionID
71	memo
72	sender
73	receiver
74	source branch office
75	destination branch office
76	Money transaction database
77	HR manager
78	Employee
79	name
80	Contact details
81	designation
82	Working hours
83	salary
84	Basic amount
85	Active bonus
86	Transaction information
87	Service duration
88	Service location
89	history of activities
90	Labor cost
91	SAPAS
92	Account

10.2. Verb list:

No	Verb	No	Verb
1	Are eligible	2	can create
3	Can log	4	May update
5	Need not	6	Can recover
7	update	8	Are handled
9	input	10	hand over
11	weigh	12	inspect
13	have	14	assign
15	differ	16	wants
17	have	18	Can make
19	Consist of	20	Will be created
21	use	22	log
21	supervise	22	entail
23	integrate	24	allow
25	show	26	increase
27	lower	28	divide
29	contain	30	record
31	ship	32	confirm
33	arrive	34	inform
35	store	36	receive
37	maintain	38	help
39	scan	40	verify
41	find out	42	complete

43	follow	44	deposit
45	send	46	go
47	collect	48	pay
49	access	50	describe

10.3. General Classification:

Candidate classes were then characterized in seven general classes. The seven general characteristics are as follows:

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

Potential nouns to become a class after general classification criteria :

Noun	General Classification
Customer	4, 5, 7
User handle	2
Email address	1, 3
Resident address	1, 2
Location API (GPS)	1
HR Manager	4, 5, 7
Digital memo	2, 3, 7
Phone number	1, 2
Delivery address	1, 2
Payment	2, 3, 7
Receiver	4, 5
Order	2, 3, 7
Receptionist	4, 5, 7

Employee	4, 5, 7
Parcel	2, 7
Documents	2
Delicate goods	3
Delivery batch time	1
Delivery id	1, 2
Dashboard	2
Database	2, 7
Mobile Financial Service	1, 3
SSLCOMMERZ	1, 3
Warehouse operators	4, 5, 7
Batch	2, 3, 7
logistical operator	4, 5, 7
QR code	1, 2
Warehouse map	2, 6
Warehouse	2, 3, 7
location status	3, 6
scanning device	7
accountant	4, 5, 7
sender	4, 5
branch office	6
salary	3
Active bonus	3
SAPAS	2, 3, 5, 7
Account	2, 7

10.4. Selection Criteria:

The candidate classes are then selected as classes by six Selection Criteria.
A candidate class generally becomes a class when it fulfills around three characteristics.

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

Potential general classified nouns to become a class after selection criteria

10.5. Class Selection Criteria:

Noun	Selection Criteria
Customer	1, 2, 3, 4, 5 (selected)
HR Manager	1, 2, 3, 4, 5 (selected)
Digital Memo	1, 3, 4 (selected)
Payment	1, 2, 3, 4, 5 (selected)
QR Code	1
Transaction History	1
Order	1, 2, 3, 4, 5(selected)
Employee	1, 2, 3, 4, 5 (selected)
Batch	1, 3, 4 (selected)
SSLCommerz	6 (selected)
Accountant	1, 2, 3, 4, 5 (selected)
Receptionist	1, 2, 3, 4, 5 (selected)
Warehouse Operator	1, 2, 3, 4, 5 (selected)
Logistical Operator	1, 2, 3, 4, 5 (selected)
SAPAS	1, 2, 3, 4, 5 (selected)
Dashboard	5
Warehouse Map	1

Account	1
Warehouse	1, 3, 4, 5 (selected)
Transaction	1, 2, 3, 4, 5 (selected)
Location API (GPS)	6 (selected)

10.6. Attributes and Methods Identification:

Class Name	Attribute	Method
SAPAS		+createAccount() -verifyInfo() -notifyUser() -sendConfirmation() -promptMemo() +getUserInfo() +updateDetails() -notifyAfterTransaction() -generateOrderId() -generateTransactionDate() -generateTransactionTime() -generateBatchId() -sendOTP() -passwordRecovery() -displaySystemStats()
Customer	-name -orderList -userID -profilePicture -phoneNumber -emailAddress -residentAddress	+getName() +getUserID() +getOrderList() +getprofilePicture() +getPhoneNumber() +getEmail() +setName() +setOrderList() +setUserID() +setProfilePicture() +setPhoneNumber() +setEmailAddress() +getResidentAddress() +setResidentAddress()

Employee	-phoneNumber -emailAddress -designation -workingHours -salary -serviceLocation -serviceDuration -bankAccountNumber -workload -bonus	+setWorkload() +setWorkingHours() +setServiceLocation() +setSalary() +setBonus() +setPhoneNumber() +setEmailAddress() +setDesignation() +setServiceDuration() +setBankAccountNumber() +getPhoneNumber() +getEmailAddress() +getDesignation() +getWorkingHours() +getSalary() +getServiceLocation() +getServiceDuration() +getBankAccountNumber() +getWorkLoad() +getBonus()
Receptionist	-phoneNumber -emailAddress -designation -workingHours -salary -serviceLocation -serviceDuration -bankAccountNumber -workload -bonus	+setWorkload() +setWorkingHours() +setServiceLocation() +setSalary() +setBonus() +setPhoneNumber() +setEmailAddress() +setDesignation() +setServiceDuration() +setBankAccountNumber() +getPhoneNumber() +getEmailAddress() +getDesignation() +getWorkingHours() +getSalary() +getServiceLocation() +getServiceDuration() +getBankAccountNumber() +getWorkLoad() +getBonus()
WarehouseOperator	-phoneNumber -emailAddress	+setWorkload() +setWorkingHours()

	-designation -workingHours -salary -serviceLocation -serviceDuration -bankAccountNumber -workload -bonus	+setServiceLocation() +setSalary() +setBonus() +setPhoneNumber() +setEmailAddress() +setDesignation() +setServiceDuration() +setBankAccountNumber() +getPhoneNumber() +getEmailAddress() +getDesignation() +getWorkingHours() +getSalary() +getServiceLocation() +getServiceDuration() +getBankAccountNumber() +getWorkLoad() +getBonus()
Accountant	-phoneNumber -emailAddress -designation -workingHours -salary -serviceLocation -serviceDuration -bankAccountNumber -workload -bonus	+setWorkload() +setWorkingHours() +setServiceLocation() +setSalary() +setBonus() +setPhoneNumber() +setEmailAddress() +setDesignation() +setServiceDuration() +setBankAccountNumber() +getPhoneNumber() +getEmailAddress() +getDesignation() +getWorkingHours() +getSalary() +getServiceLocation() +getServiceDuration() +getBankAccountNumber() +getWorkLoad() +getBonus()
HR Manager	-phoneNumber -emailAddress -designation -workingHours	+setWorkload() +setWorkingHours() +setServiceLocation() +setSalary()

	-salary -serviceLocation -serviceDuration -bankAccountNumber -workload -bonus	+setBonus() +setPhoneNumber() +setEmailAddress() +setDesignation() +setServiceDuration() +setBankAccountNumber() +getPhoneNumber() +getEmailAddress() +getDesignation() +getWorkingHours() +getSalary() +getServiceLocation() +getServiceDuration() +getBankAccountNumber() +getWorkLoad() +getBonus() +sendGlobalMessage()
LogisticOperator	-phoneNumber -emailAddress -designation -workingHours -salary -serviceLocation -serviceDuration -bankAccountNumber -workload -bonus	+setWorkload() +setWorkingHours() +setServiceLocation() +setSalary() +setBonus() +setPhoneNumber() +setEmailAddress() +setDesignation() +setServiceDuration() +setBankAccountNumber() +getPhoneNumber() +getEmailAddress() +getDesignation() +getWorkingHours() +getSalary() +getServiceLocation() +getServiceDuration() +getBankAccountNumber() +getWorkLoad() +getBonus()
Batch	-hasArrived -batchID -itemList -departureTime -arrivalTime	+release() +addItem() +removeItem() +setBatchID() +setDepartureTime()

	-departureLocation -arrivalLocation -vehicleID -assignedDriver	+setArrivalTime() +setDepartureLocation() +setArrivalLocation() +setVehicleID() +setAssignedDriver() +getBatchID() +getDepartureTime() +getArrivalTime() +getDepartureLocation() +getArrivalLocation() +getVehicleID() +getAssignedDriver()
Order	-orderID -orderWeight -orderCatagory -orderDeliveryTime -isEmergencyDelivery -isDelivered	+setOrderID() +setOrderWeight() +setOrderCategory() +setOrderDeliveryTime() +setIsEmergencyDelivery() +setIsDelivered() +getOrderID() +getOrderWeight() +getOrderCategory() +getOrderDeliveryTime() +getIsEmergencyDelivery() +getIsDelivered()
Digital Memo	-senderName -senderPhoneNumber -senderEmailAddress -receiverPhoneNumber -receiverName -orderType -parcelWeight -paymentType -deliveryAddress -duePayment -orderId -QRCode -Batch ID -Warehouse ID	+getSenderName() +getSenderPhoneNumber() +getSenderEmailAddress() +getReceiverPhoneNumber() +getReceiverName() +getOrderType() +getParcelWeight() +getPaymentType() +getDeliveryAddress() +getDuePayment() +getOrderId() +setSenderName() +setSenderPhoneNumber() +setSenderEmailAddress() +setWarehouseID() +getWarehouseID()

		+getBatchID() +setBatchID() +setReceiverPhoneNumber() +setReceiverName() +setOrderType() +setParcelWeight() +setPaymentType() +setDeliveryAddress() +setDuePayment() +setOrderId()
Payment	-paymentType -paymentTime -transactionId	+onlinePayment() +cashOnDelivery() +notifyUser() +isPaymentCompleted() +callPaymentGateway()
Warehouse	-batchList -location -WarehouseID	-sortAccordingToArrival() -sortAccordingToDeparture() +addBatch() +relinquishBatch() +getLocation() +setWarehouseID() +getWarehouseID()
MoneyTransaction	-Amount -transaction ID -transactionHistory -moneyTransactionID	-isSuccesfulTransaction() +getAmount() +getTransactionHistory() +getOrderID +setAmount() +setOrderID() +setmoneyTransationID() +moneyTransactionID()
Location	-GPSCo-ordinates -onTheMove	+getLocation() +updateLocation() +getETA()
SSLCommerz	-payment	+init()

10.7. CRC Card:

Class Name	Responsibilities	Collaborators
SAPAS	● Verifying User ● Prompt notifications ● Sending OTP at the time of signing up ● Recovering password ● Generating order ID and Batch ID ● Displaying system stats ● Generating transaction date and time	Customer Order Batch Employee Payment
Customer	● Placing order ● Selecting money transaction as order type ● Making payments ● Signing up/Logging in ● Shows credential	Payment Order SAPAS Money Transaction Employee
Employee	● Weighing order ● Issuing memo ● Dividing the parcels into batches and ensuring proper shipment ● Signing up other employees(HR department's job) ● Guiding the customers ● Update warehouse database	Order Customer Memo SAPAS Batch Warehouse Money Transaction
Receptionist	● Issues digital memo ● Guides customer ● Weighing order	Customer Digital Memo Order
Accountant	● Handles payment ● Handles money transaction ● Guides Customer	Customer Payment Money Transaction
Warehouse Operator	● Updates digital memo ● Stores batch according	Digital memo Batch

	to the destination ● Updates warehouse	Warehouse
HR Manager	● Register employees and set salary and work hour of employees	Employee
Logistic Operator	● Updates digital memo ● Creates batch ● Updates batch ● Interconnects warehouse ● Get location of batches from GPS	Digital memo Batch Warehouse GPS
Batch	● Having a unique batch id ● Having an assigned driver	
Order	● Having a specific order type and ID	
Digital Memo	● Having information about user credentials and parcel ● Getting handed over to customer	
Payment	● Managing user payment method	SAPAS Customer Employee SSLCommerz
Warehouse	● Managing batches	SAPAS GPS
Money Transaction	● When the order type is set to money it maintains the money transaction between sender and user	SAPAS Employee Customer
Location	● Track Location of Item	SAPAS

	• Calculate ETA	Order
SSLCommerz	• Provide API for payment	SAPAS Payment

Analysis

All classes included in class based diagram are selected as class for our system.

10.8. Class Cards:

SAPAS

ATTRIBUTES	METHODS
	+createAccount() -verifyInfo() -notifyUser() -sendConfirmation() -promptMemo() +getUserInfo() -notifyAfterTransaction() -generateOrderId() -generateTransactionDate() -generateTransactionTime() -generateBatchId() -sendOTP() -passwordRecovery()
RESPONSIBILITIES	**COLLABORATOR**
● Verifying User ● Prompt notifications ● Sending OTP at the time of signing up ● Recovering password ● Generating order ID and Batch ID ● Generating transaction date and time	Customer Order Batch Employee Payment

CUSTOMER

ATTRIBUTES	METHODS
-name -orderList -userHandle -profilePicture -phoneNumber -emailAddress -residentAddress	+getName() +getOrderList() +getUserHandle() +getprofilePicture() +getPhoneNumber() +getEmail() +setName() +setOrderList() +setUserHandle() +setProfilePicture() +setPhoneNumber() +setEmailAddress() +getResidentAddress() +setResidentAddress()
RESPONSIBILITIES	**COLLABORATOR**
● Placing order ● Selecting money transaction as order type ● Making payments ● Signing up / Logging in ● Shows credential	Payment Order SAPAS Money Transaction Employee

EMPLOYEE

ATTRIBUTES	METHODS
-phoneNumber -emailAddress -designation -workingHours -salary -serviceLocation -serviceDuration -bankAccountNumber -workload -bonus	+setWorkload() +setWorkingHours() +setServiceLocation() +setSalary() +setBonus() +setPhoneNumber() +setEmailAddress() +setDesignation() +setServiceDuration() +setBankAccountNumber() +getPhoneNumber() +getEmailAddress() +getDesignation() +getWorkingHours() +getSalary() +getServiceLocation() +getServiceDuration() +getBankAccountNumber() +getWorkLoad() +getBonus()
RESPONSIBILITIES	**COLLABORATOR**
• Log in the system • Guides Customer	SAPAS Customer

ORDER

ATTRIBUTES	METHODS
-orderID -orderWeight -orderCatagory -orderDeliveryTime -isEmergencyDelivery -isDelivered	+setOrderID() +setOrderWeight() +setOrderCategory() +setOrderDeliveryTime() +setIsEmergencyDelivery() +setIsDelivered() +getOrderID() +getOrderWeight() +getOrderCategory() +getOrderDeliveryTime() +getIsEmergencyDelivery() +getIsDelivered()
RESPONSIBILITIES	**COLLABORATOR**
• Having a specific order type and ID	Customer Employee Batch

RECEPTIONIST

ATTRIBUTES	METHODS
-phoneNumber -emailAddress -designation -workingHours -salary -serviceLocation -serviceDuration -bankAccountNumber -workload -bonus	+setWorkload() +setWorkingHours() +setServiceLocation() +setSalary() +setBonus() +setPhoneNumber() +setEmailAddress() +setDesignation() +setServiceDuration() +setBankAccountNumber() +getPhoneNumber() +getEmailAddress() +getDesignation() +getWorkingHours() +getSalary() +getServiceLocation() +getServiceDuration() +getBankAccountNumber() +getWorkLoad() +getBonus()
RESPONSIBILITIES	**COLLABORATOR**
• Issues digital memo • Guides customer • Weighing order	Customer Digital Memo Order

ACCOUNTANT

ATTRIBUTES	METHODS
-phoneNumber -emailAddress -designation -workingHours -salary -serviceLocation -serviceDuration -bankAccountNumber -workload -bonus	+setWorkload() +setWorkingHours() +setServiceLocation() +setSalary() +setBonus() +setPhoneNumber() +setEmailAddress() +setDesignation() +setServiceDuration() +setBankAccountNumber() +getPhoneNumber() +getEmailAddress() +getDesignation() +getWorkingHours() +getSalary() +getServiceLocation() +getServiceDuration() +getBankAccountNumber() +getWorkLoad() +getBonus()
RESPONSIBILITIES	**COLLABORATOR**
• Handles payment • Handles money transaction • Guides Customer	Customer Payment Money Transaction

WAREHOUSE OPERATOR

ATTRIBUTES	METHODS
-phoneNumber -emailAddress -designation -workingHours -salary -serviceLocation -serviceDuration -bankAccountNumber -workload -bonus	+setWorkload() +setWorkingHours() +setServiceLocation() +setSalary() +setBonus() +setPhoneNumber() +setEmailAddress() +setDesignation() +setServiceDuration() +setBankAccountNumber() +getPhoneNumber() +getEmailAddress() +getDesignation() +getWorkingHours() +getSalary() +getServiceLocation() +getServiceDuration() +getBankAccountNumber() +getWorkLoad() +getBonus()
RESPONSIBILITIES	**COLLABORATOR**
• Updates digital memo • Stores batch systematically • Updates warehouse	Digital memo Batch Warehouse

LOGISTIC OPERATOR

ATTRIBUTES	METHODS
-phoneNumber -emailAddress -designation -workingHours -salary -serviceLocation -serviceDuration -bankAccountNumber -workload -bonus	+setWorkload() +setWorkingHours() +setServiceLocation() +setSalary() +setBonus() +setPhoneNumber() +setEmailAddress() +setDesignation() +setServiceDuration() +setBankAccountNumber() +getPhoneNumber() +getEmailAddress() +getDesignation() +getWorkingHours() +getSalary() +getServiceLocation() +getServiceDuration() +getBankAccountNumber() +getWorkLoad() +getBonus()
RESPONSIBILITIES	**COLLABORATOR**
• Updates digital memo • Creates batch • Updates batch • Interconnects warehouse • Get location of batches from GPS	Digital memo Batch Warehouse GPS

HR MANAGER

ATTRIBUTES	METHODS
-phoneNumber -emailAddress -designation -workingHours -salary -serviceLocation -serviceDuration -bankAccountNumber -workload -bonus	+setWorkload() +setWorkingHours() +setServiceLocation() +setSalary() +setBonus() +setPhoneNumber() +setEmailAddress() +setDesignation() +setServiceDuration() +setBankAccountNumber() +getPhoneNumber() +getEmailAddress() +getDesignation() +getWorkingHours() +getSalary() +getServiceLocation() +getServiceDuration() +getBankAccountNumber() +getWorkLoad() +getBonus() +sendGlobalMessage()
RESPONSIBILITIES	**COLLABORATOR**
• Register employees and set salary and work hour of employees	Employee

DIGITAL MEMO

ATTRIBUTES	METHODS
-senderName -senderPhoneNumber -senderEmailAddress -receiverPhoneNumber -receiverName -orderType -parcelWeight -paymentType -deliveryAddress -duePayment -orderId -QRCode -Batch ID -WarehouseID	+getSenderName() +getSenderPhoneNumber() +getSenderEmailAddress() +getReceiverPhoneNumber() +getReceiverName() +getOrderType() +getParcelWeight() +getPaymentType() +getDeliveryAddress() +getDuePayment() +getOrderId() +setSenderName() +setSenderPhoneNumber() +setSenderEmailAddress() +setReceiverPhoneNumber() +setReceiverName() +setOrderType() +setParcelWeight() +setPaymentType() +setDeliveryAddress() +setDuePayment() +setOrderId() +setBatchID() +getBatchID() +setWarehouseID() +getWarehouseID()
RESPONSIBILITIES	**COLLABORATOR**
• Having information about user credentials and parcel • Getting handed over to customer	Customer Employee Order SAPAS

PAYMENT

ATTRIBUTES	METHODS
-paymentType -paymentTime -transactionId	+onlinePayment() +cashOnDelivery() +notifyUser() +isPaymentCompleted()
RESPONSIBILITIES	**COLLABORATOR**
• Managing user payment method	Digital Memo Customer Employee

WAREHOUSE

ATTRIBUTES	METHODS
-batchList -location -WarehouseID	-sortAccordingToArrival() -sortAccordingToDeparture() +addBatch() +relinquishBatch() +getLocation() +setWarehouseID() +getWarehouseID()
RESPONSIBILITIES	**COLLABORATOR**
• Managing batches	Digital memo GPS

MONEY TRANSACTION

ATTRIBUTES	METHODS
-Amount -orderID -transactionHistory -moneyTransactionID	-isSuccesfulTransaction() +getAmount() +getTransactionHistory() +getOrderID +setAmount() +setOrderID() +setmoneyTransationID() +moneyTransationID()
RESPONSIBILITIES	**COLLABORATOR**
• When the order type is set to money it maintains the money transaction between sender and user	Digital memo Employee Customer

LOCATION

ATTRIBUTES	METHODS
-GPSCo-ordinates -onTheMove	+getLocation() +updateLocation() +getETA()
RESPONSIBILITIES	**COLLABORATORS**
• Track Location of Item • Calculate ETA	SAPAS GPS Digital memo

SSLCOMMERZ

ATTRIBUTES	METHODS
-payment	+init() +getPayment()
RESPONSIBILITIES	**COLLABORATORS**
• Provide API for Payment	Digital memo Payment

10.9. Analysis:

Employee Super Class:

Since SA Paribahan is a moderately large organization, it consists of different types of employees. They have similar attributes, collaborations and responsibilities. Naturally, these employee classes (e.g. “Logistic Operator”, “Accountant” etc.) fall under an “Employee” super class. We have made sure to reflect this scenario in our SRS design.

A brief description of their specializations are as follows:

HR Manager: HR Manager has a few additional responsibilities in addition to that of regular employees. They can send global notifications, alter credentials of other employees and set their workloads.

Warehouse Operator: Warehouse Operator has “Warehouse” as an additional collaboration; well, for obvious reasons.

10.10. CRC Diagram

Diagram ID: 1

Name: SAPAS

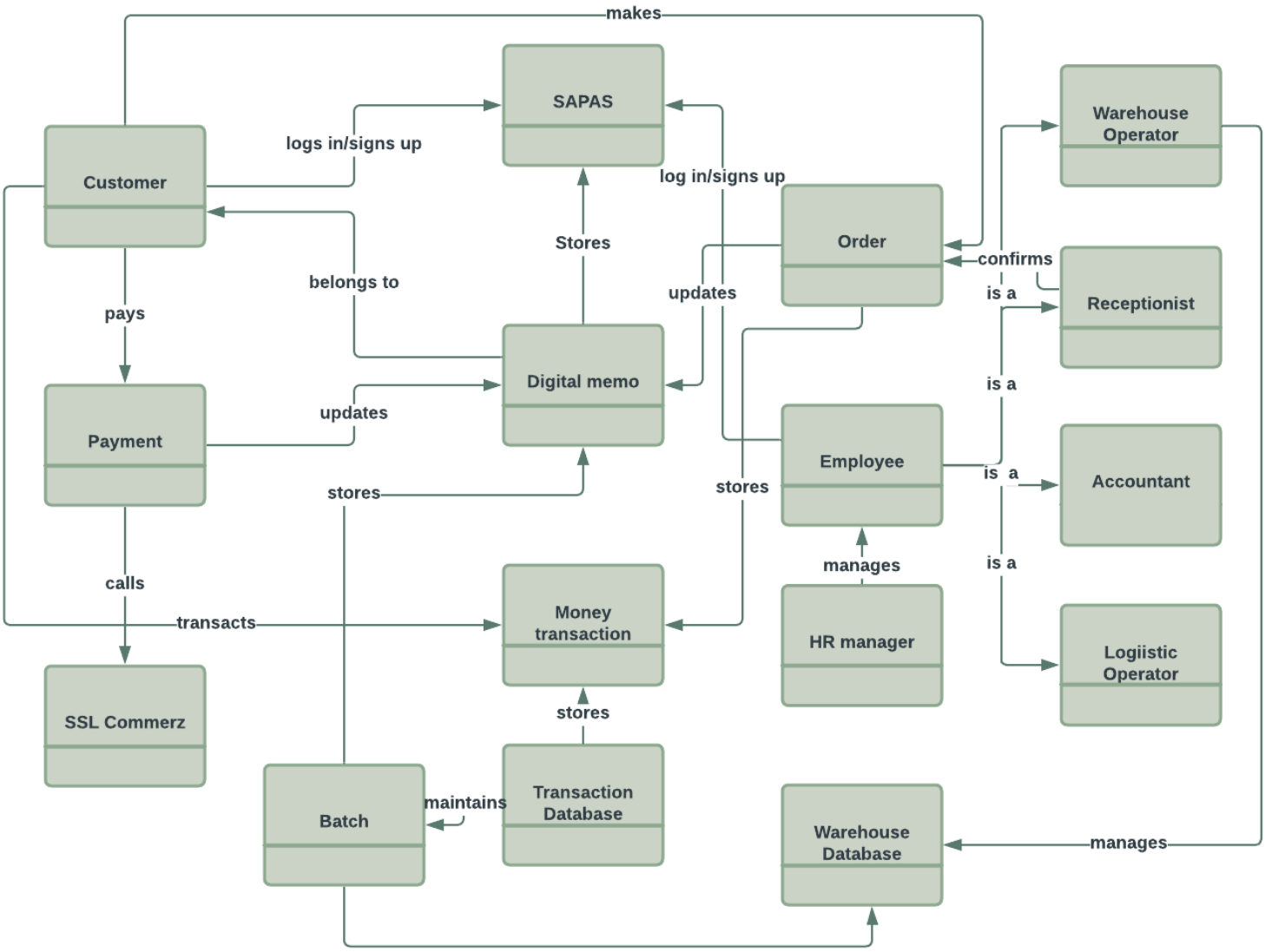


Diagram ID: 2
Name : Customer

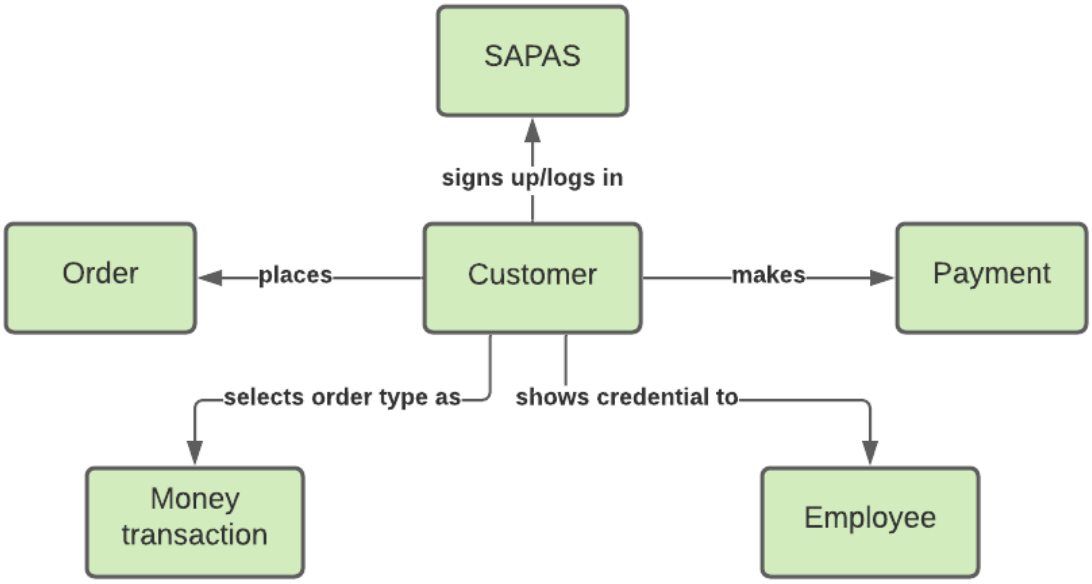


Diagram ID: 3
Name: Employee

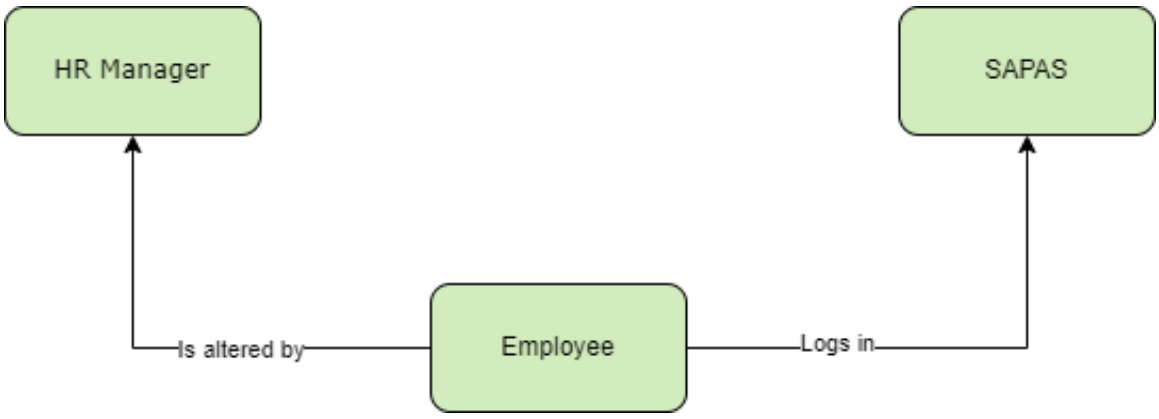


Diagram ID: 4
Name: Receptionist

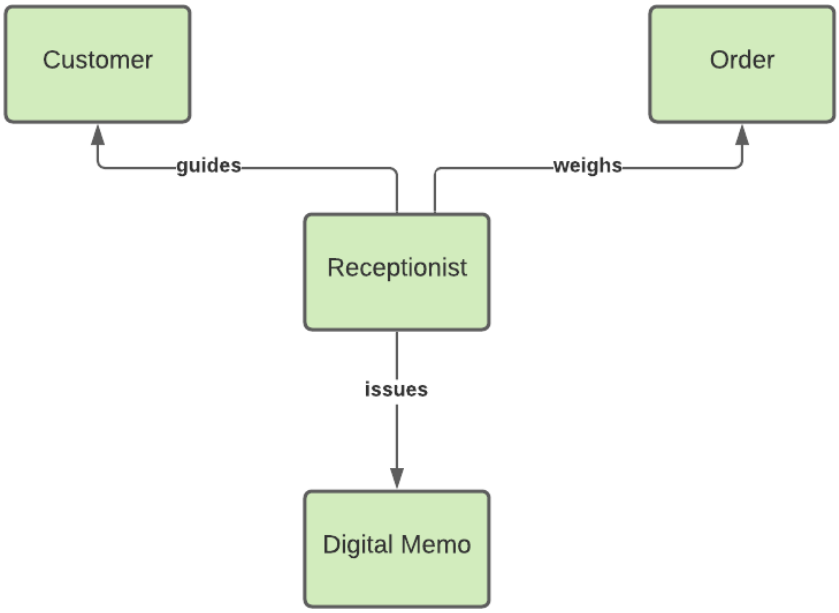


Diagram ID : 5
Name: Accountant

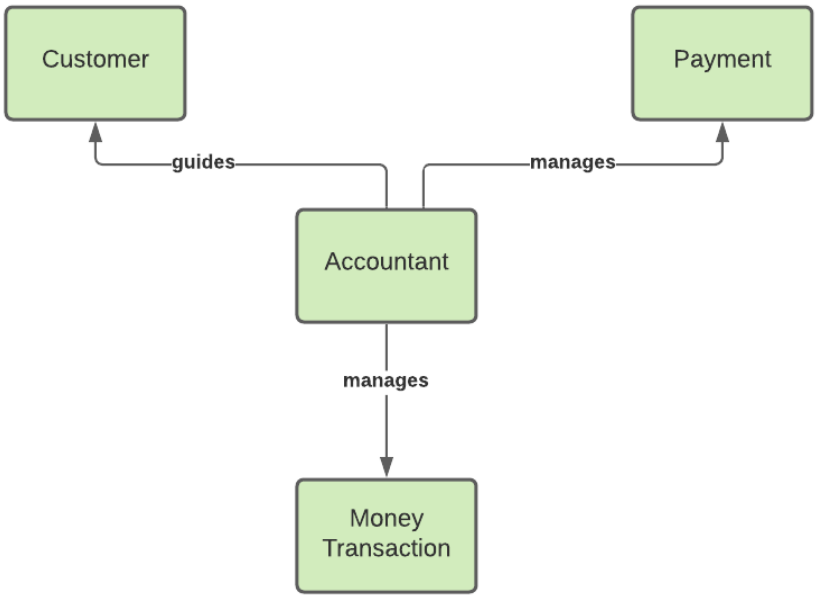


Diagram ID : 6
Name : Warehouse Operator

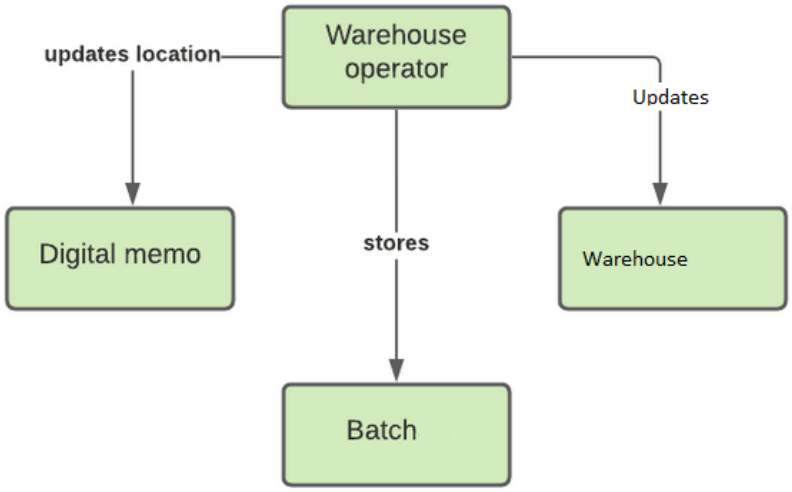


Diagram ID : 7
Name : Logistic Operator

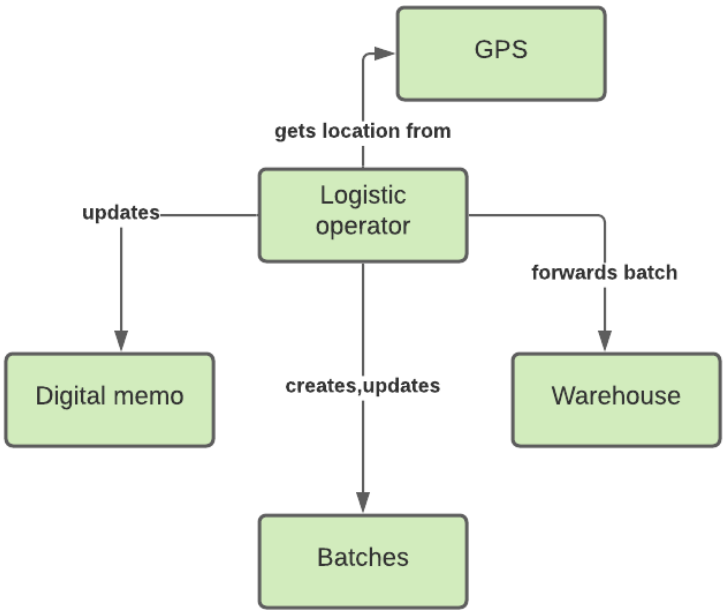


Diagram ID : 8
Name ID : HR Manager

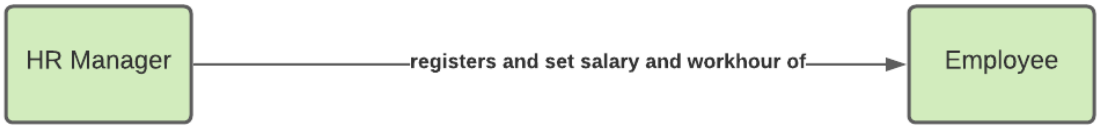


Diagram ID: 9
Name: Payment

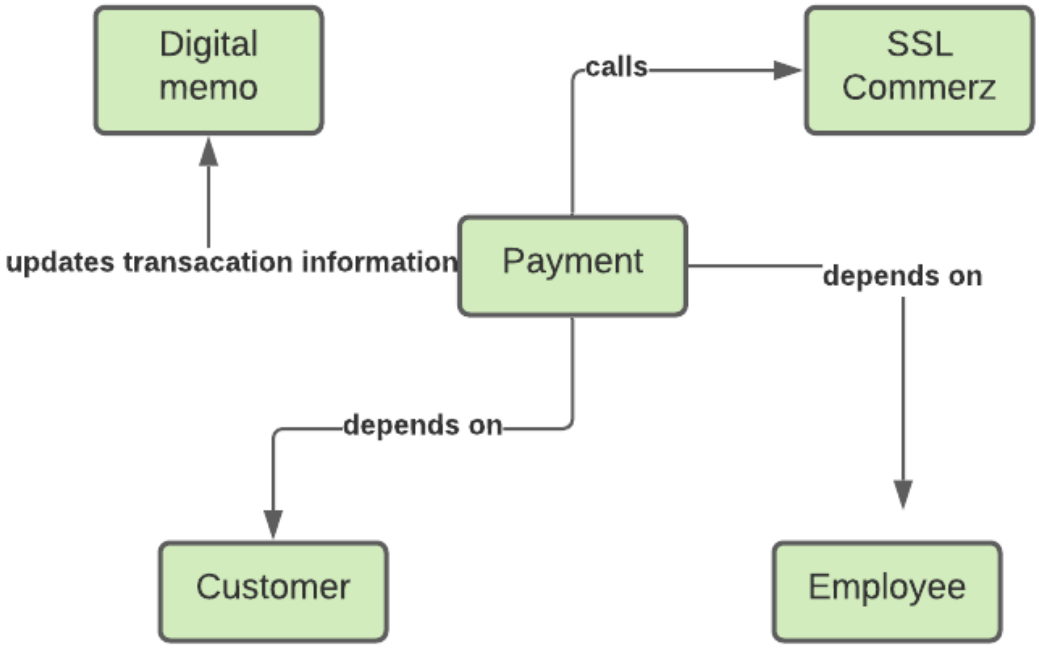


Diagram ID: 10
Name: Warehouse management

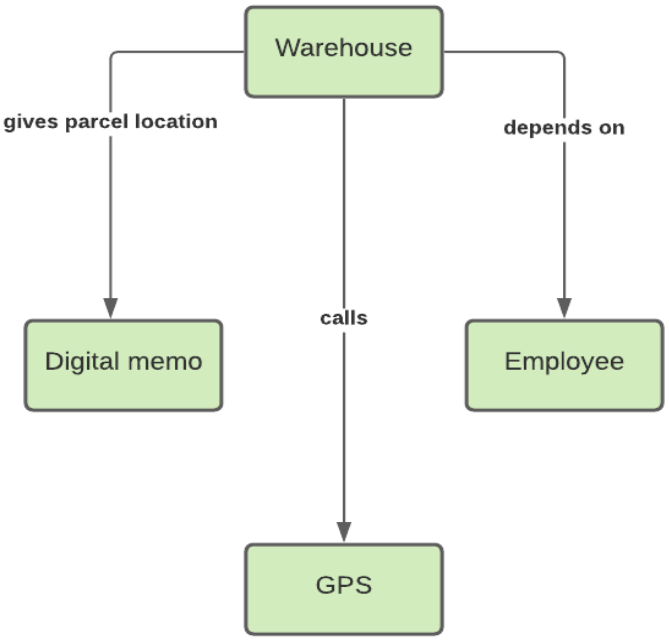


Diagram ID: 11
Name: Money transaction

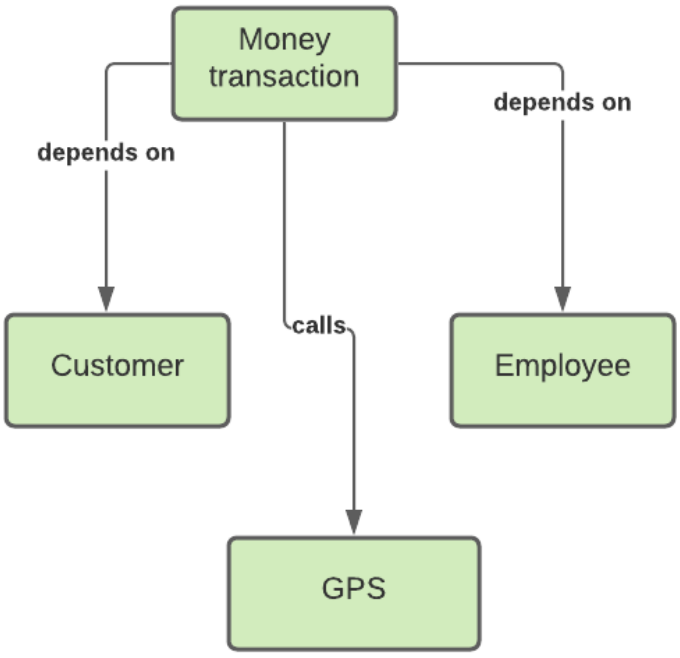


Diagram ID: 12
Name: Location

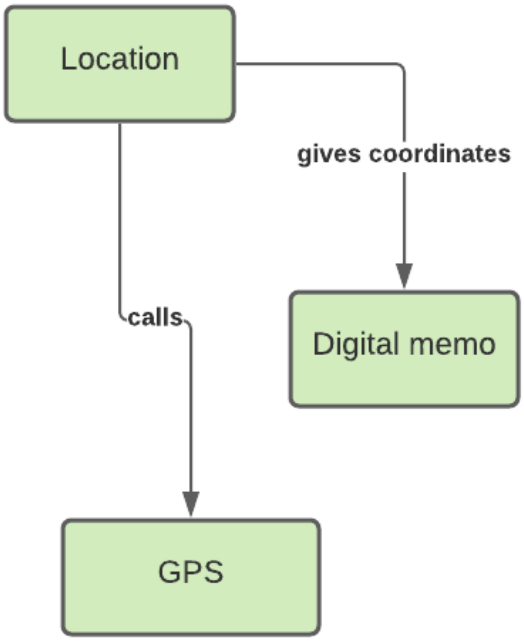
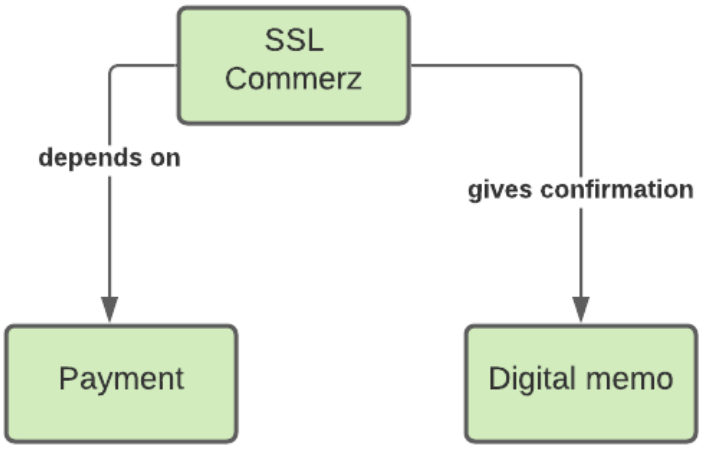


Diagram ID: 13
Name: SSL commerz



11. Behavioral Modeling Of SAPAS (Assignment - 9)

11.1. Event Table

SL. No.	Event	State Name	Initiator	Collaborator	Associated Method
1	Will Create an account	Register	Sender, Receiver	SAPAS, SMS, Email	+createAccount() -verifyInfo() +notifyUser() -sendConfirmation()
2	Will provide information	Provide Credentials	Sender, Receiver	SAPAS	+getUserInfo()
3	Will Verify User's credentials	Verified	SAPAS	Email, SMS	-sendConfirmation()
4	Will login to system	Provide username and password	Sender, Receiver, Employee,		-verifyInfo()
5	Will recover password	Update Password	Sender, Receiver	SAPAS, Email	-passwordRecovery()
6	Will be updating user’s information	Update Information	Sender, Receiver, Employee	SAPAS, Email	+setName() +setUserHandle() +setProfilePicture()

					+setPhoneNumber() +setEmailAddress() +setResidentAddress()
7	Inputting order information	Provide parcel info	Receptionist	SAPAS	-generateOrderId()
8	Will generate a digital memo	Generate digital memo	Order		+setSenderName() +setSenderPhoneNumber() +setSenderEmailAddress() +setReceiverPhoneNumber() +setReceiverName() +setOrderType() +setParcelWeight() +setPaymentType() +setDeliveryAddress() +setOrderId() +setAmount()
9	Will pay digitally	Digital Payment	Sender, Receiver	SAPAS, SSLCommerZ	+onlinePayment()

10	Accountant will verify the state of payment	Confirmed by system	Accountant, SAPAS		+cashOnDelivery() +notifyUser() +isPaymentCompleted()
11	Will update the state of payment in digital memo	Payment successful in digital memo	SAPAS	Accountant, Digital Memo	+setDuePayment()
12	Will retrieve stored location	Get Location	Sender, Receiver	SAPAS	+getLocation()
13	Will calculate ETA of Parcel	Get Parcel ETA	Sender, Receiver	SAPAS Order	+getETA()
14	Will update stored location	Update Location	Sender, Receiver	SAPAS, Order	+UpdateLocation()
15	Will be attached to Transaction	Attach to Payment	MoneyTrans a-ction	Money Transaction, SAPAS	+Init()

16	Employee Account Creation	Create_Employee_account	HR manager	Email, S.A.P.A.S	+setWorkload() +setWorkingHours() +setSalary() +setBonus() +setPhoneNumber() +setEmailAddress() +setDesignation() +setServiceDuration() +setBankAccountNumber()
18	Will see employment status	Employement_status	Employee, HR manager	SAPAS	-checkEmployementStatus()
19	Employee's will communicate in the workplace	Send_message	Employee	Email,SAPAS	-sendMessage()
20	HR manager will manage work	HR_allocation	HR Manager, Employee	Email,SAPAS	-hrAllocation()

21	Will set the bonuses for employees	Set_bonus	HR manager	SAPAS	+setBonus()
22	Will set salary of employee	Set_salary	HR manager	SAPAS	+setSalary()
23	Will check off assigned tasks	Task_list	Employee	SAPAS	+completeTask()
24	Will see task list	Task_list	Employee	SAPAS	+returnTaskList()
25	Will send announcement messages	Post_announcements	HR Manager	SAPAS	+sendGlobalMessage()
26	Logistical Operator will insert Parcel	Division of Parcels according to batch	Logistical operator, Warehouse operator	Database, SAPAS	+addItem()
27	Logistical Operator will remove Parcel	Remove_a_parcel	Logistical operator, Warehouse operator	SAPAS	+removeItem()
28	Batch information	Generation of automated	Logistical operator,war	Database,Shipment,SAPAS	+setDepartureTime() +setArrivalTime()

	will be instantiated	batch id for each batch	ehouse operator		+setDepartureLocation() +setVehicleID() +setAssignedDriver()
29	Updating warehouse location	Slot Location	Warehouse manager	QR code,SAPAS, Database,Digital memo	+setArrivalLocation() +getArrivalLocation()
30	Assigning slots to parcels	Slot assign	Wirehouse manager	QR code,SAPAS, Database,Digital memo	-sortAccordingToArrival() -sortAccordingToDeparture() +addBatch()
31	Recommendin-g slots for parcels	Scanning parcels QR code for suitable slot	Warehouse manager	QR code,SAPAS, Database,Digital memo	-recommendSlot()
32	Will find the slot where the parcel is located	Finding out the corresponding slot in case of delivery	Warehouse manager	SAPAS, Digital Memo Database	+getLocation()
33	Taking a batch out for delivery	Taking out a batch to ship	Logistics, Operator	SAPAS, Digital	+release() +insert()

				Memo, Database	+remove() +getBatchID() +getDepartureTime()
34	Will confirm the arrival of batches	Confirm_Arrival_of Batches	Logistics Operator	SAPAS	+getArrivalTime() +getDepartureLocation() +getArrivalLocation() +getVehicleID() +getAssignedDriver()
35	Will make the transaction after receiving the money from the sender	Send_money	Accountant	SAPAS	+makeTransaction()
36	Will calculate ETA of parcel	Get ETA	Sender	SAPAS ,GPS	+getArrivalTime()
37	Will call SSL-Commerz	Pay Bill	Payment	SAPAS, Payment gateway	+callPaymentGateway()
38	Will display system stats	Display System Stats	SAPAS		-displaySystemStats()

39	Will notify after order completion	Notify about completion	SAPAS		-notifyUser()

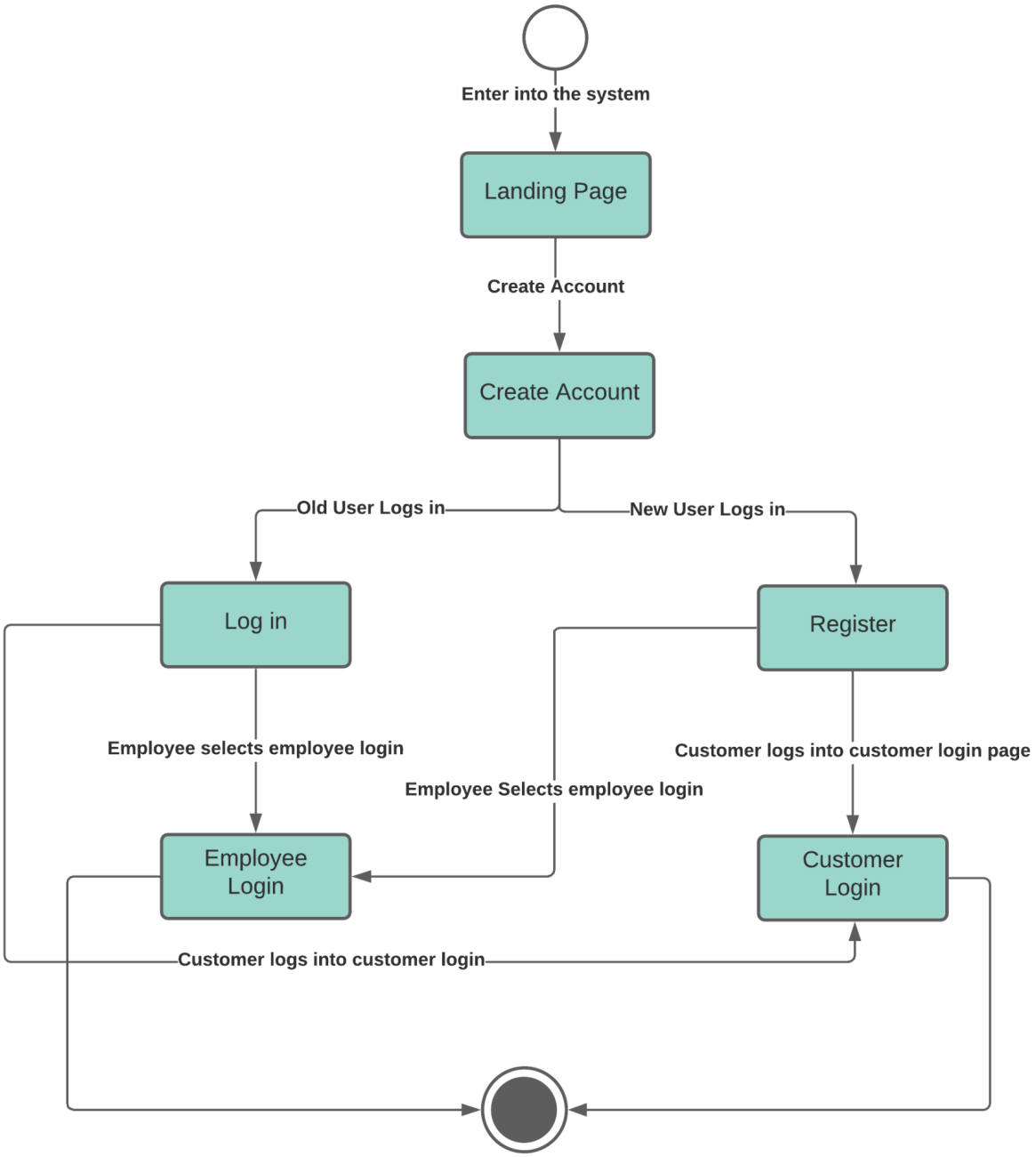
11.2. State Transition:

STATE TRANSITION DIAGRAM

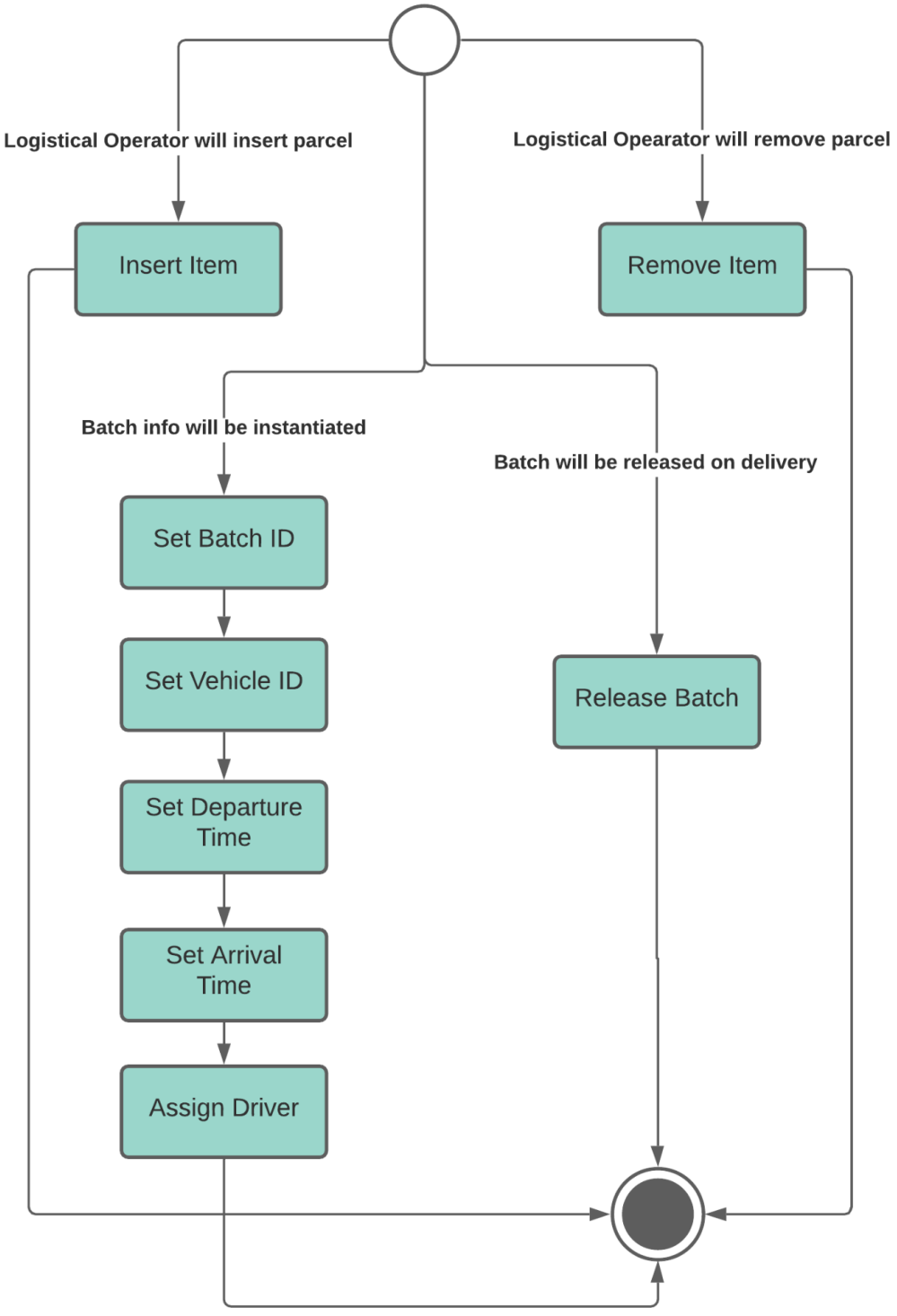
State diagram represents active states for each class of events (triggers). For this we identified all the events, their initiators and collaborators.

ID: 1

Name: Account Management

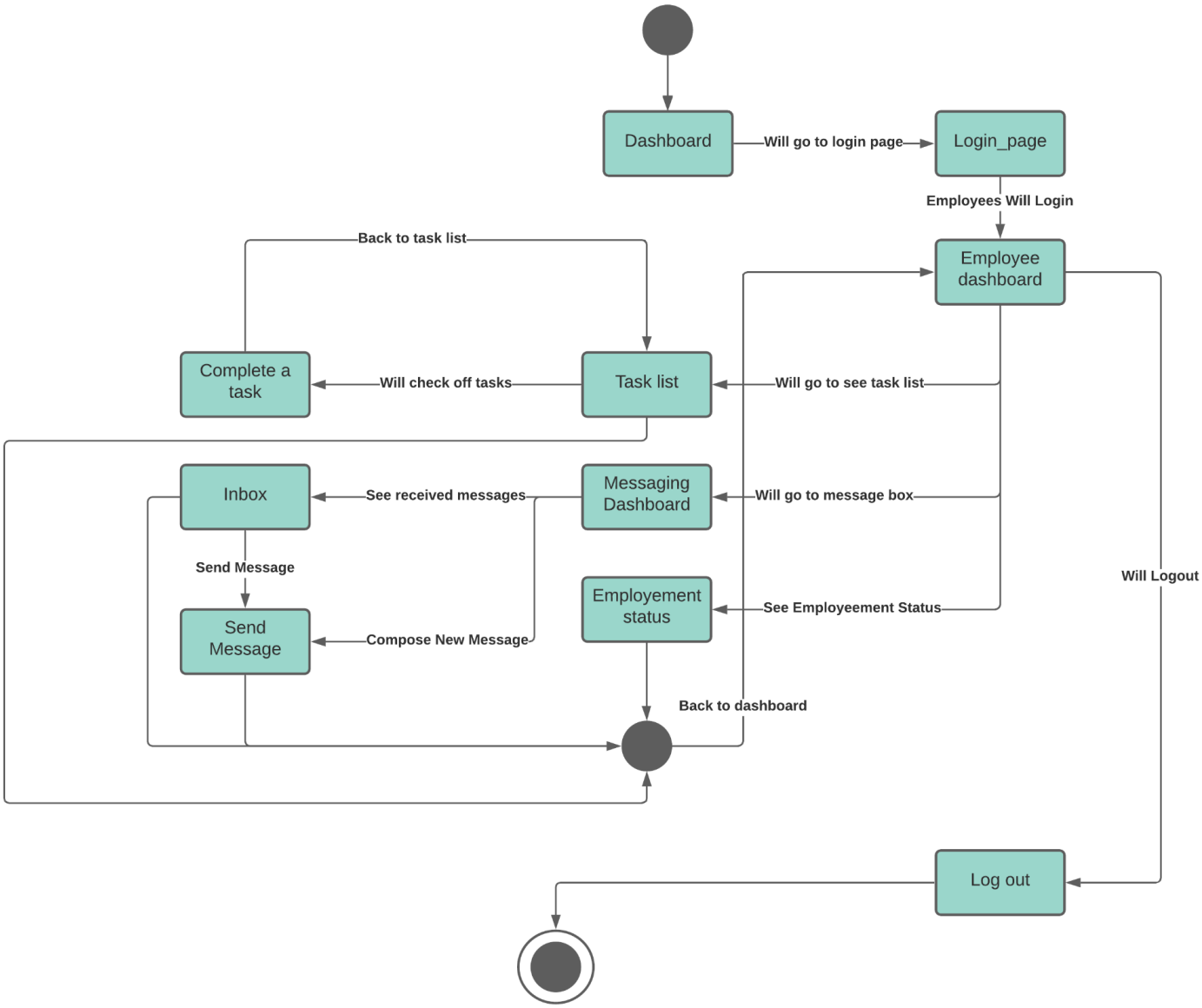


ID: 2
Name: Batch



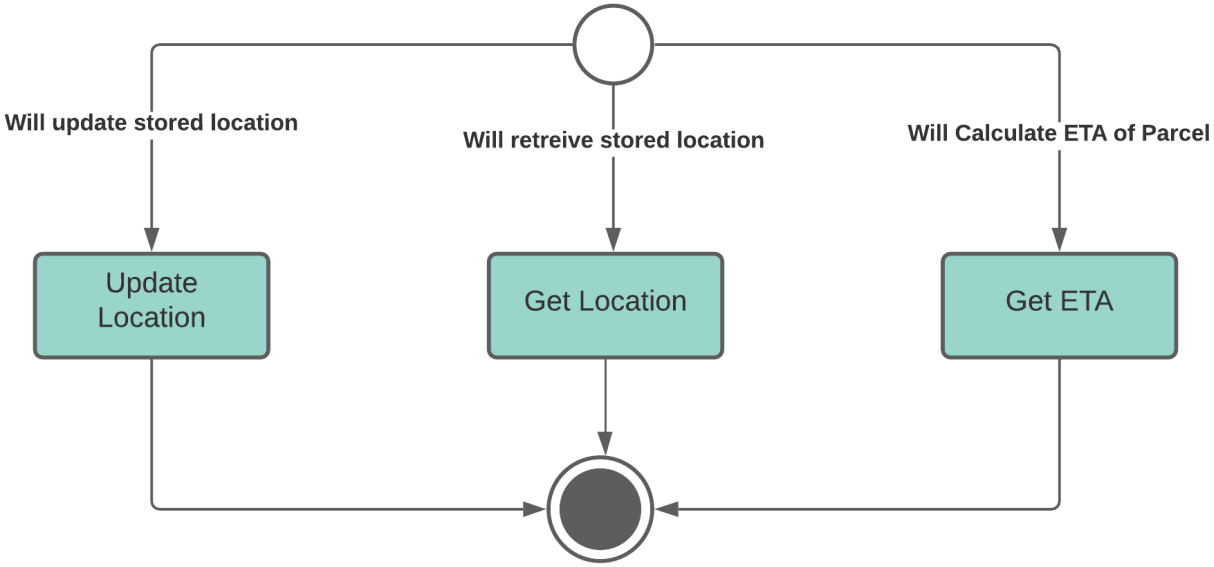
ID: 3

Name: Employee



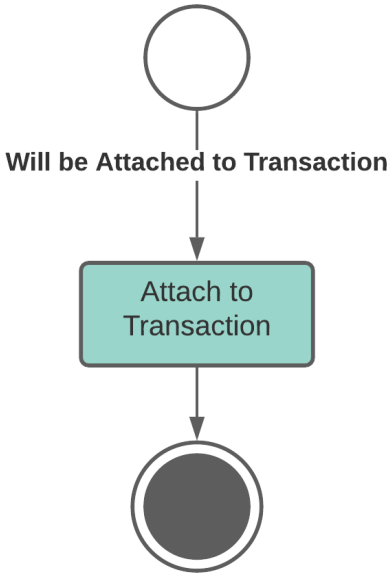
ID: 4

Location



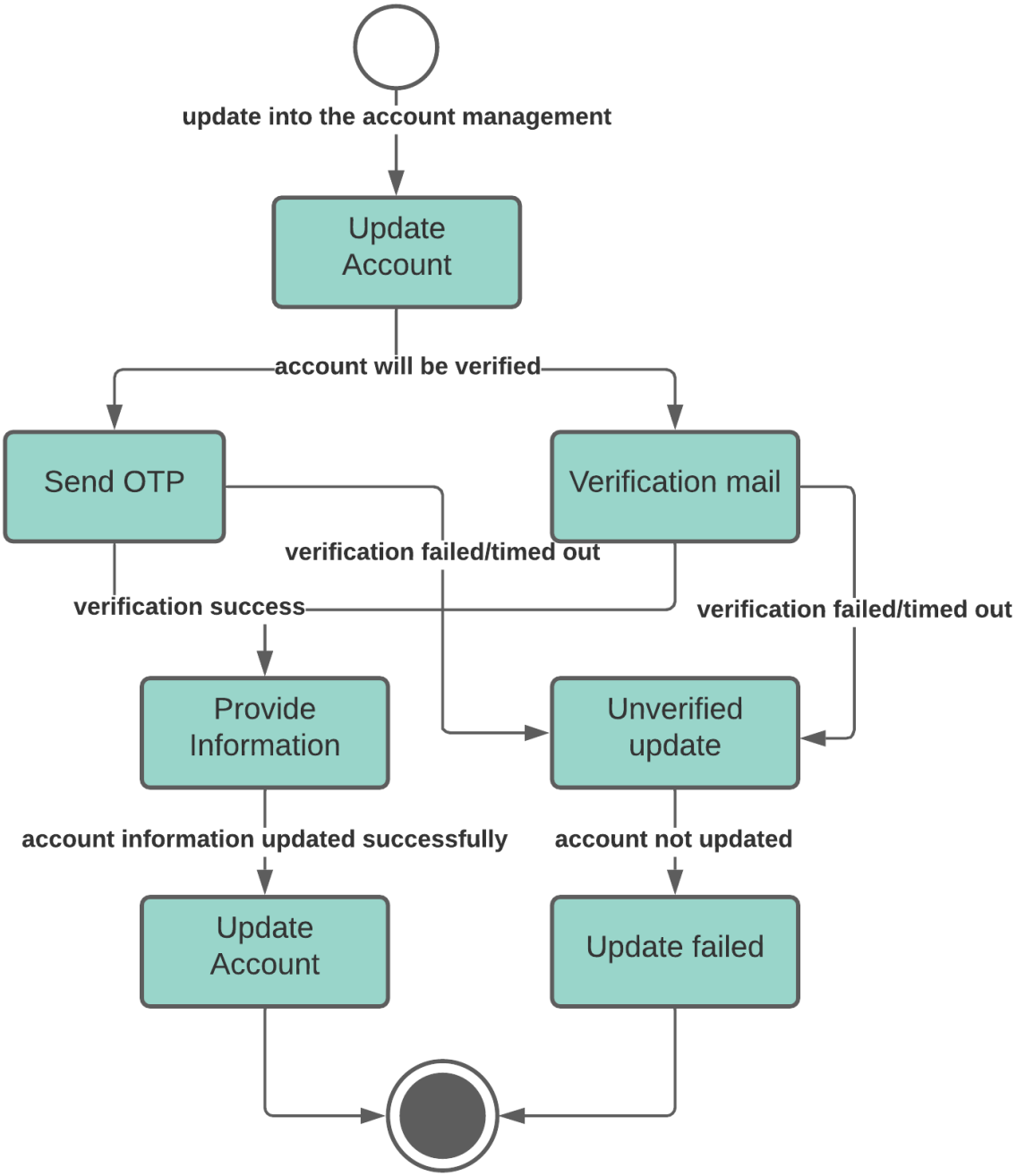
ID: 5

SSLCommerz



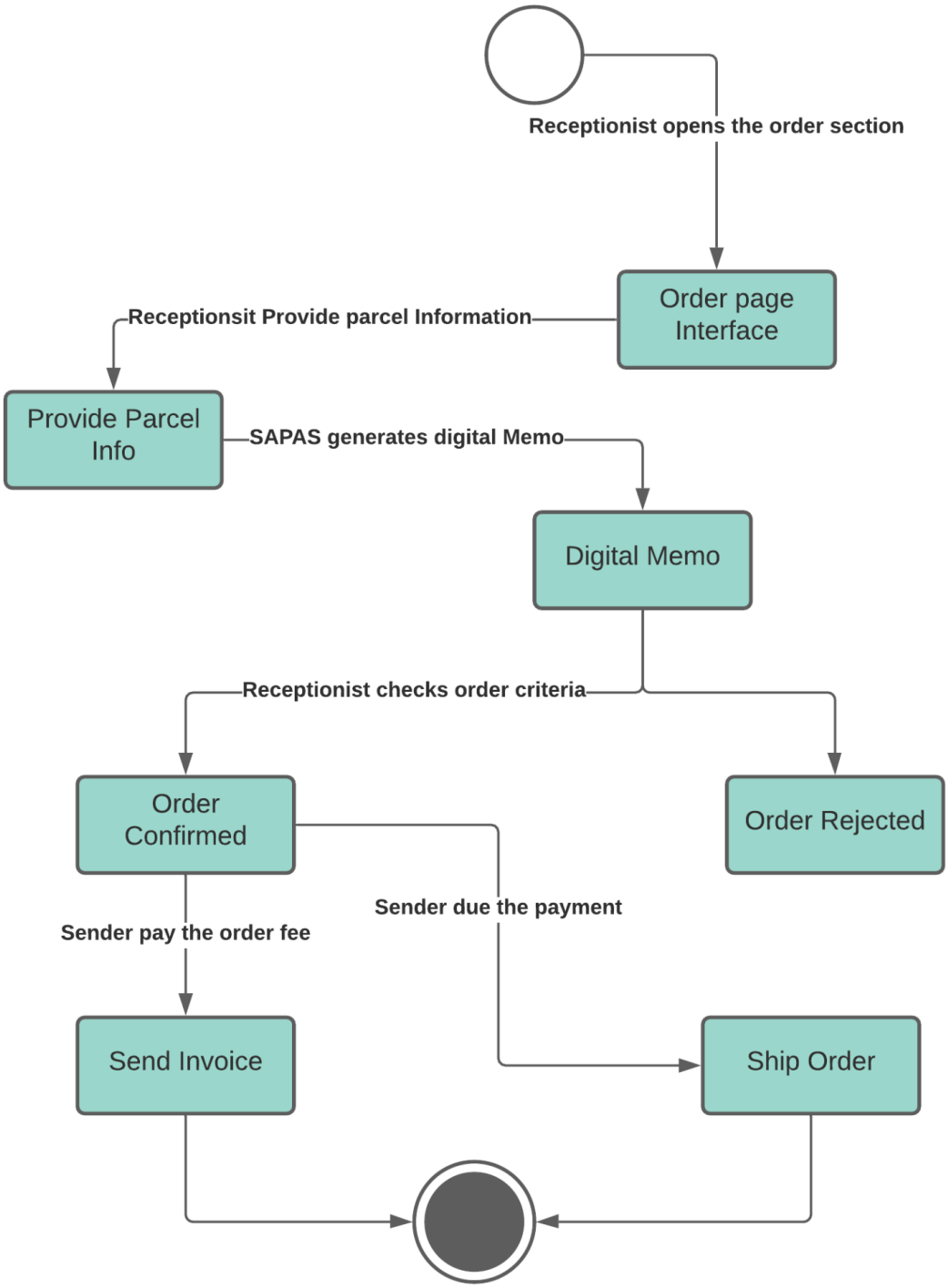
ID: 6

Account Update

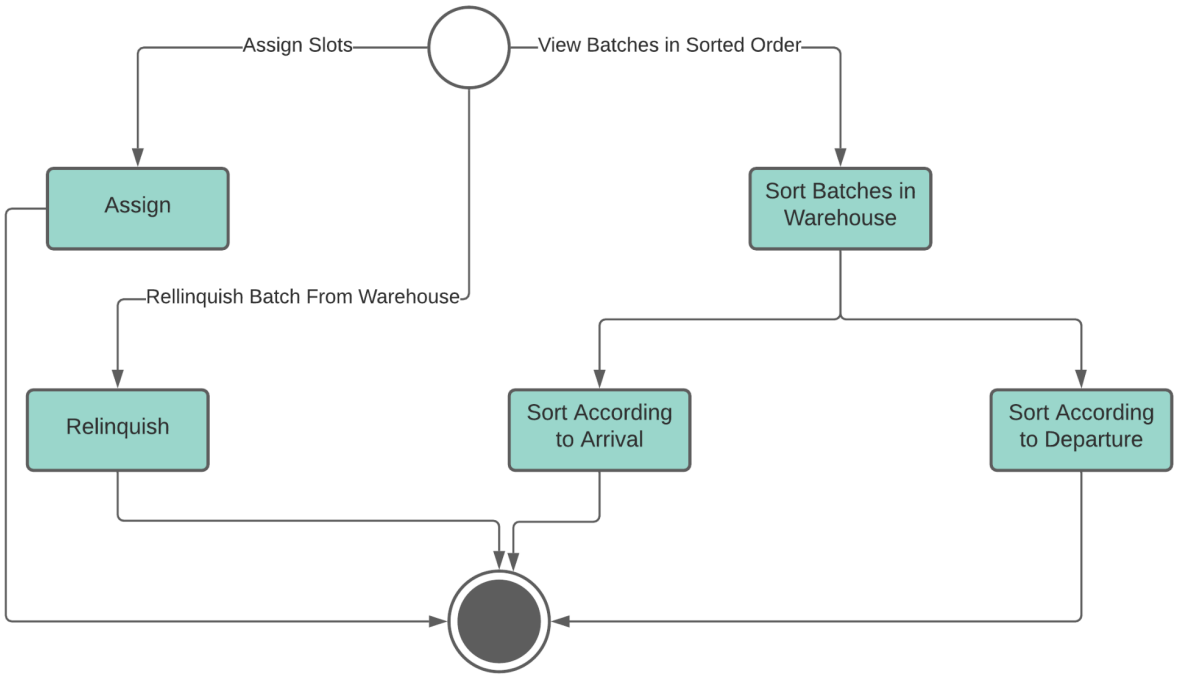


ID: 7

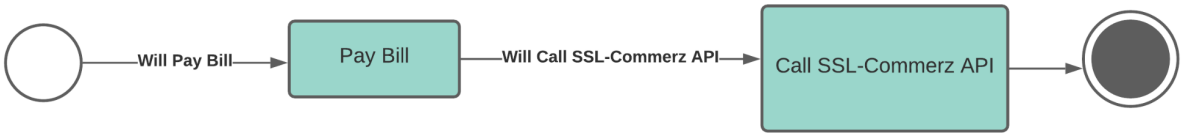
Order


Receptionist opens the order section
Order page Interface
Receptionsit Provide parcel Information
Provide Parcel Info
SAPAS generates digital Memo
Digital Memo
Receptionist checks order criteria
Order Confirmed
Order Rejected
Sender pay the order fee
Sender due the payment
Send Invoice
Ship Order

ID: 8
Warehouse

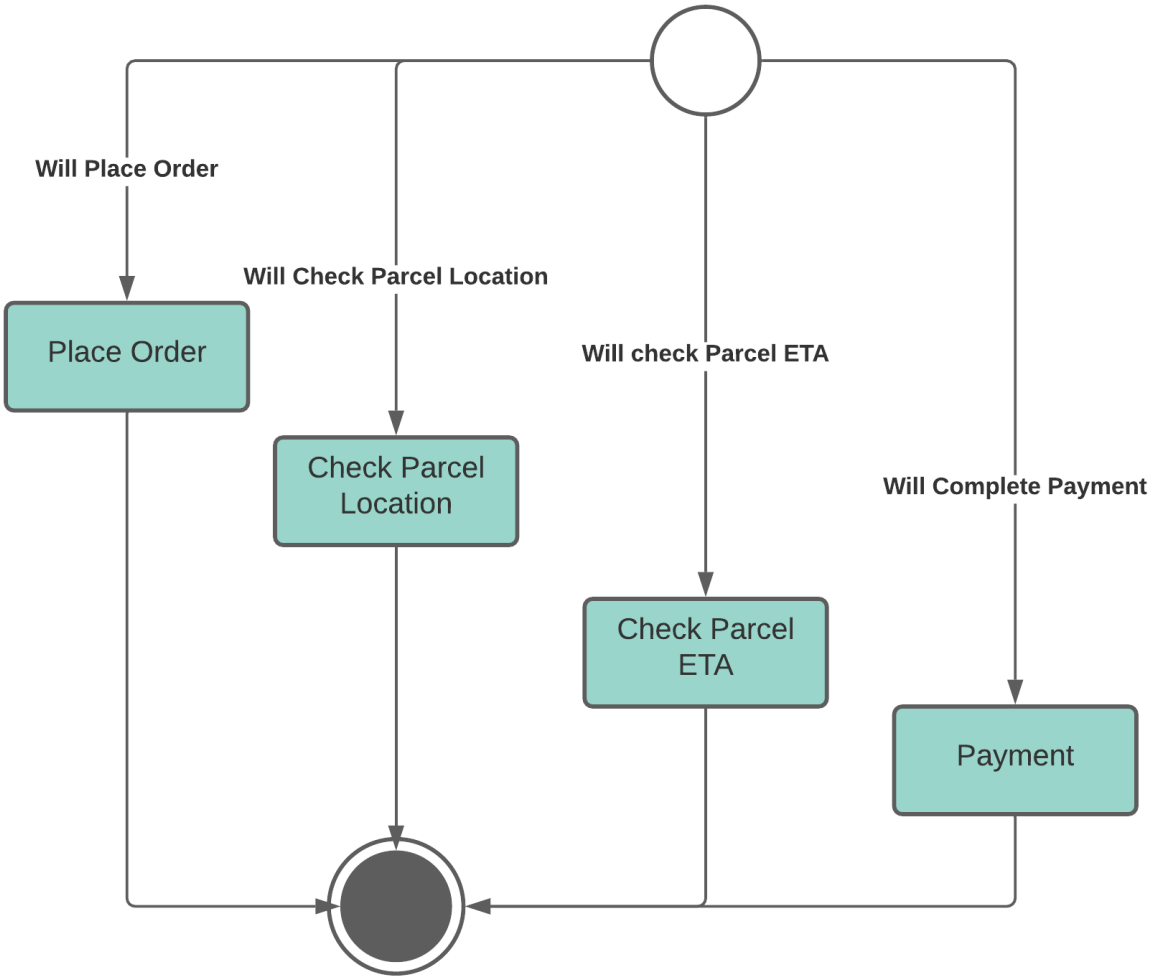


ID: 9
Payment

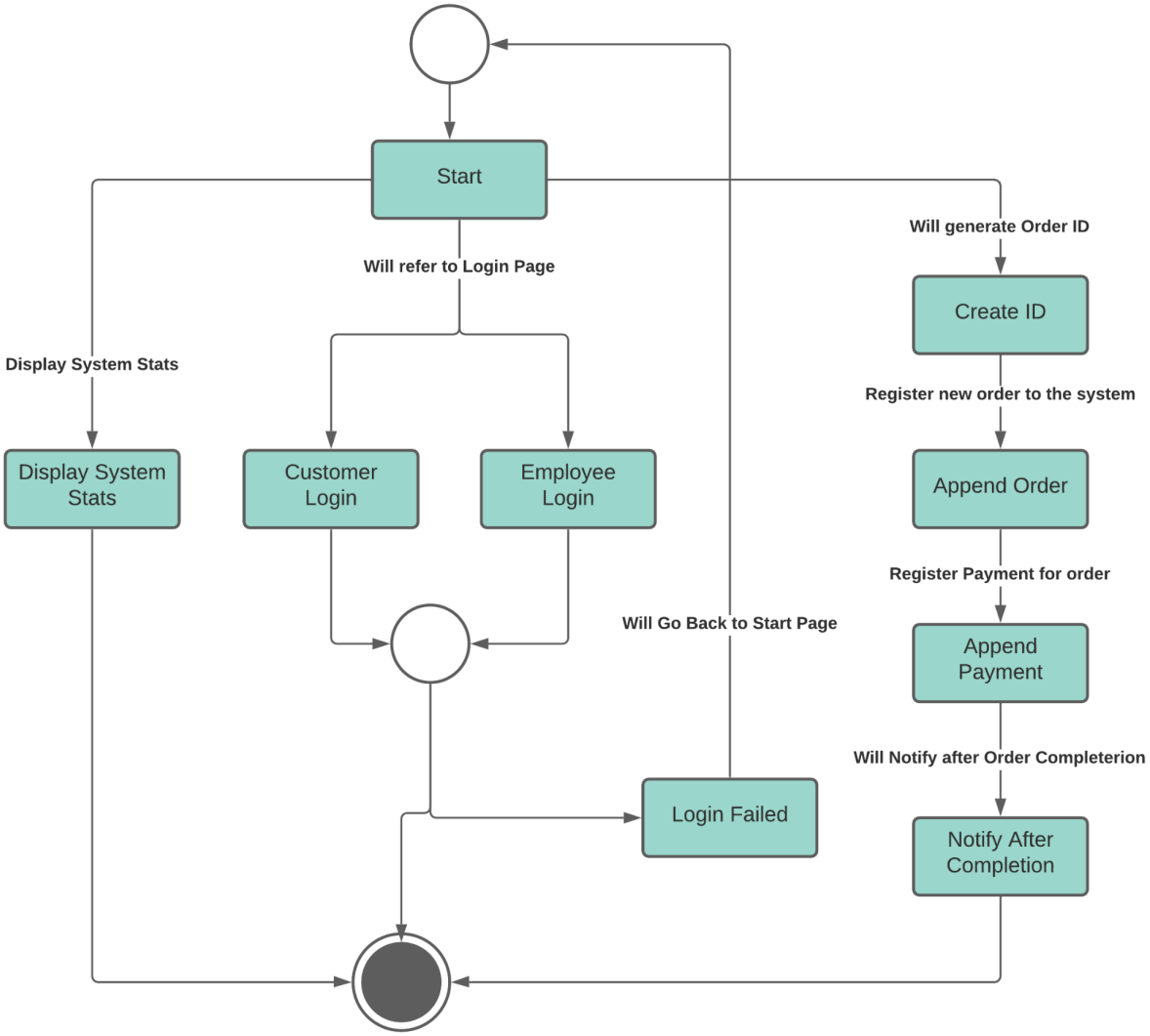


ID: 10

Customer

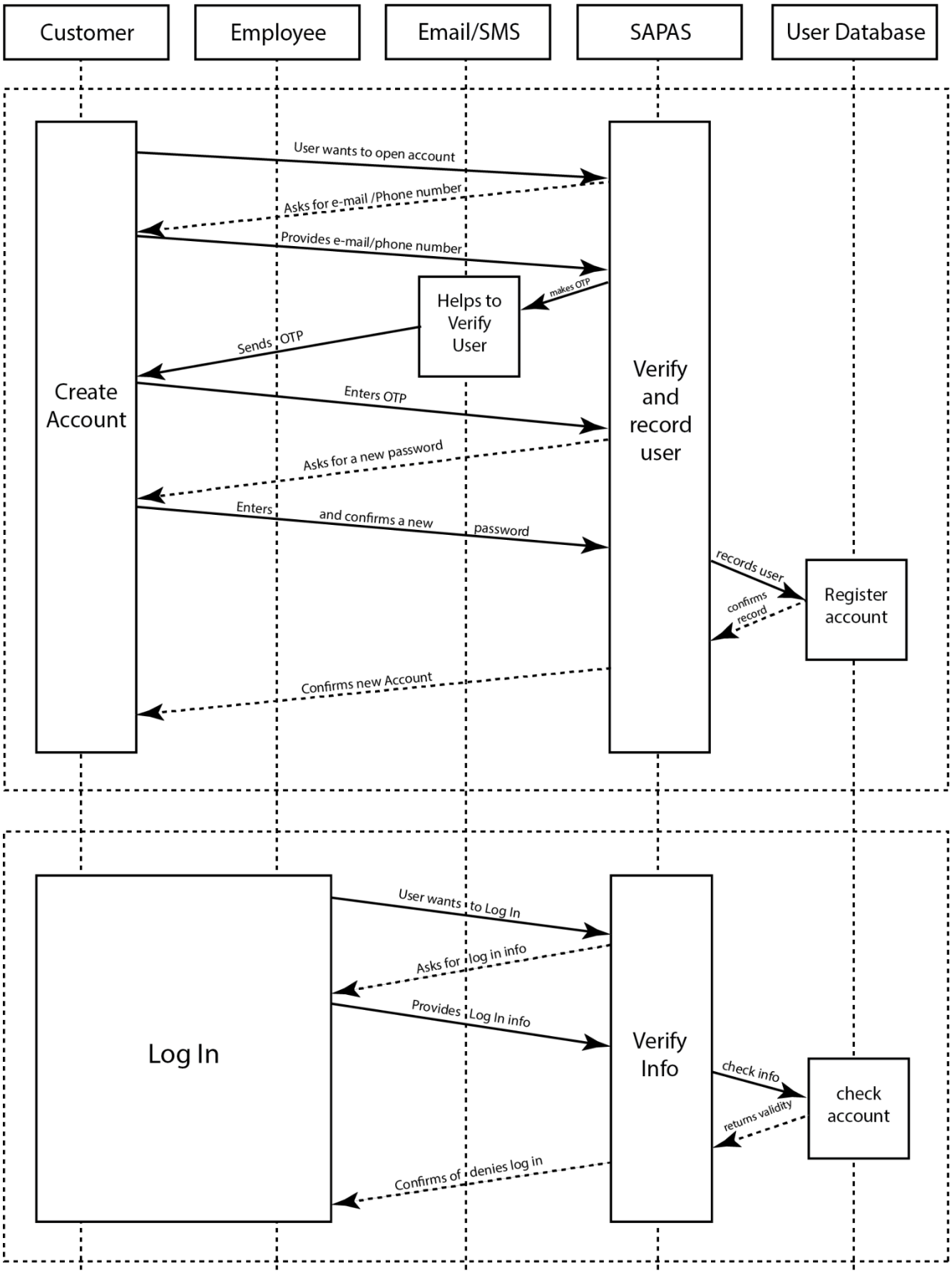


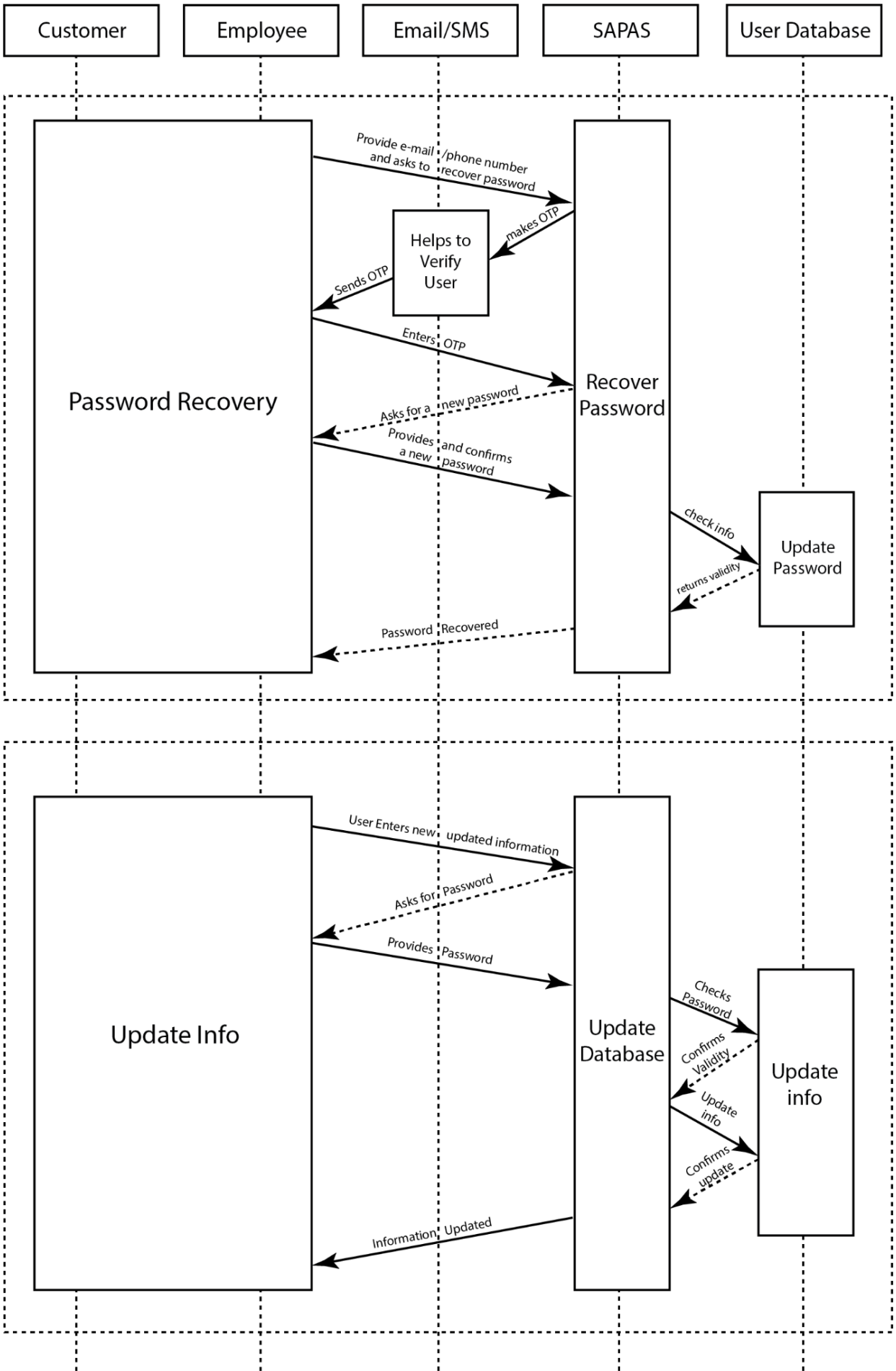
ID: 11
SAPAS

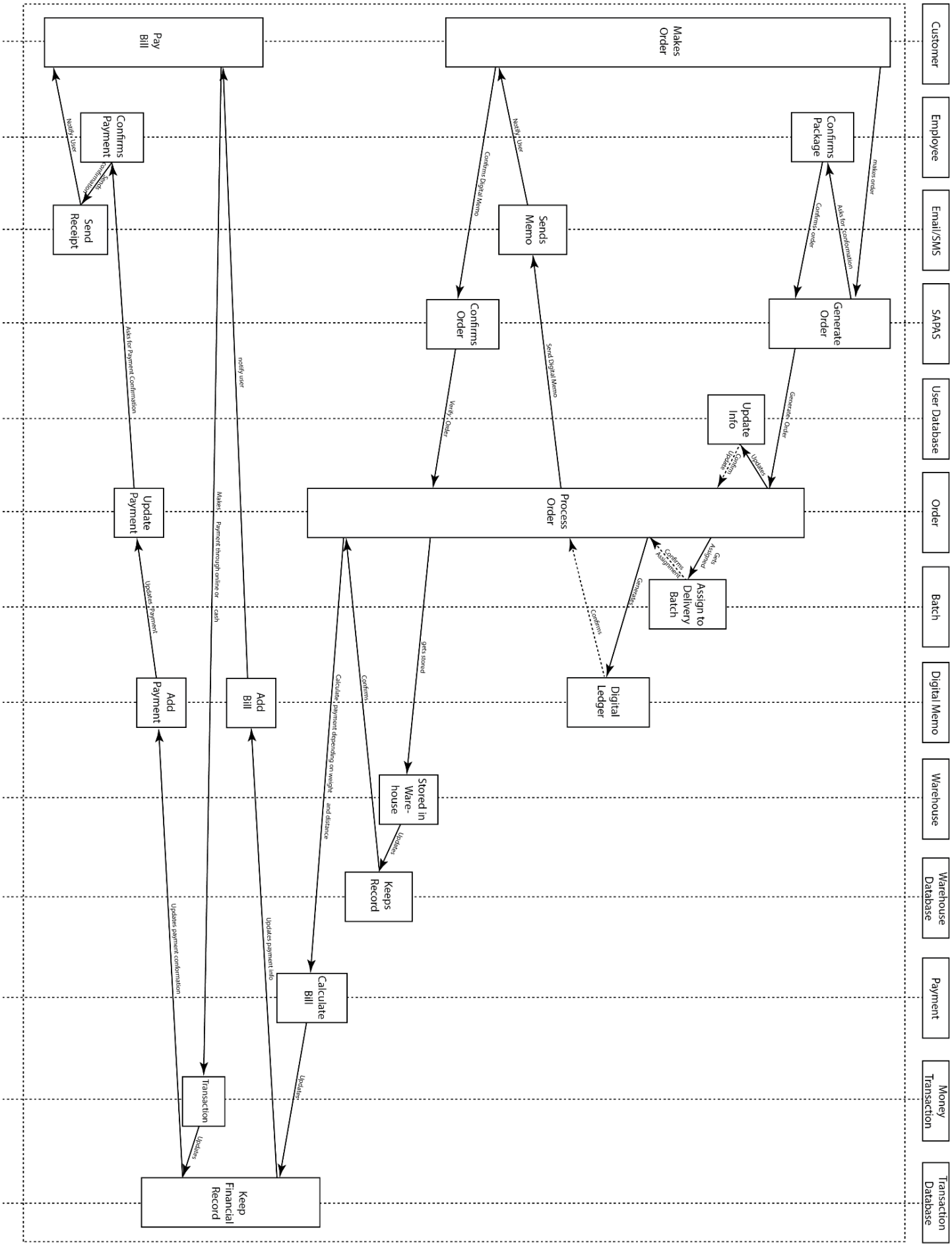

Start
Will refer to Login Page
Display System Stats
Will generate Order ID
Create ID
Register new order to the system
Display System Stats
Customer Login
Employee Login
Append Order
Register Payment for order
Will Go Back to Start Page
Append Payment
Will Notify after Order Completerion
Login Failed
Notify After Completion

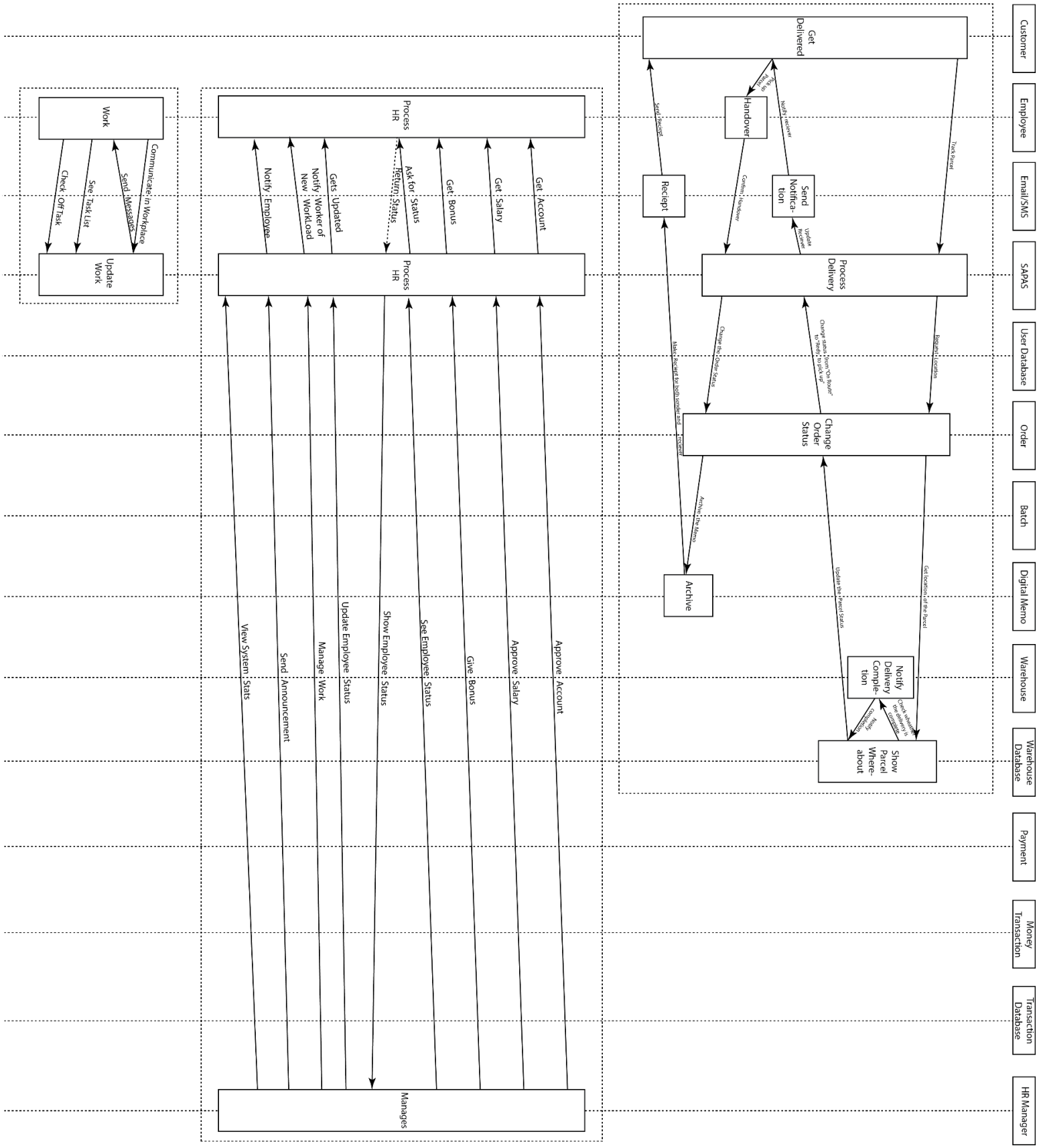
12. Sequence Diagram (Assignment - 9)

[For higher resolution of the Sequence Diagram]




Customer
Employee
Email/SMS
SAPAS
User Database
Password Recovery
Provide e-mail /phone number and asks to recover password
makes OTP
Helps to Verify User
Sends OTP
Enters OTP
Recover Password
Asks for a new password
Provides and confirms a new password
check info
Update Password
returns validity
Password Recovered
Update Info
User Enters new updated information
Asks for Password
Provides Password
Update Database
Checks Password
Confirms Validity
Update info
Update info
Confirms update
Information Updated


Customer
Employee
Email/SMS
SAPAS
User Database
Order
Batch
Digital Memo
Warehouse
Warehouse Database
Payment
Money Transaction
Transaction Database
Makes Order
Confirms Package
Generate Order
Sends Memo
Confirms Order
Update Info
Process Order
Assign to Delivery Batch
Digital Ledger
Stored in Ware-house
Keeps Record
Calculate Bill
Add Bill
Pay Bill
Confirms Payment
Send Receipt
Update Payment
Add Payment
Transaction
Keep Financial Record
makes order
Confirms order
Asks for conformation
Notify User
Confirms Digital Memo
Send Digital Memo
Verify Order
Generate Order
Updates
Confirms Update
Assigns
Confirms Assignment
Generates
Confirms
gets stored
Updates
Calculate payment depending on weight and distance
confirms
Updates payment info
Updates
Notify User
Sends confirmation
Asks for Payment Confirmation
notify user
Makes Payment through online or cash
Updates Payment
Updates payment conformation
Updates



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