Package Delivery Application System

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Contents

1 Introduction

This section gives a scope description and overview of everything included in this SRS document. Also, the purpose for this document is described and a list of abbreviations and definitions is provided.

1.1 Purpose

The purpose of this document is to give a detailed description of the requirements for the 147 package delivery system software. It will illustrate the purpose and complete declaration for the development of system. It will also explain system constraints, interface and interactions with other external applications. This document is primarily intended to be proposed to a customer for its approval and a reference for developing the first version of the system for the development team.

1.2 Scope

The 147 package delivery system is a mobile-based application which would increase the field peoples working efficiency, the efficiency of delivery, and reduce the errors made by human inputs, etc. The user could be a service person, a logistics company and the customers of the corresponding logistics company. The application should be free to download from either a mobile phone application store or similar services.

For logistics company, access authority to the system varies. Management staff can use the web-portal in order to handle delivery orders, appoint postman and do other administrative tasks. An administrator uses the web-portal in order to administer the system and keep the information accurate. The administrator can, for instance, verify users and manage their information as well as packages. Another user of web-portal is service staff, who can provide before and after sale service like refunding the customer money or helping the customer to replace the product. For postman, they can use the system on mobiles to get and send package based on customers information.

Furthermore, the Client side needs Internet connection to fetch and display results. While for postman version, GPS connection is necessary as well. All system information is maintained in a database, which is located on a web-server. The software also interacts with the GPS-Navigator software which is required to be an already installed application on the users mobile phone. By using the GPS-Navigator, postman can locate customers address on a map and be navigated to them. Other third party

applications are also needed according to the customers choices. A fingerprint detection software, for example, should be installed in advance if the customer wants to sign the package by fingerprint. The application has the capability of representing both summary and detailed information about the orders.

When it comes to the scale of data volume and the number of concurrent users, the system takes advantage of a high-performance server framework to resist the flows of data daily while not decreasing the user experience.

In the meantime, the security of data is a serious problem that all system will face with. The system selects a well algorithm to encrypt the confidential information which make the database is safe.

1.3 Overview

The remainder of this document includes seven chapters. The second one provides an overview of use case modelings architecture and detailed description of each case. Activities happening under three main circumstances are contained in this chapter as well.

The third chapter explains some referring terms in the system.

The fourth chapter provides supplementary specification that cannot be learned from diagrams, including function, service, platform and other constraints of the system.

The fifth chapter gives a description of the several system interfaces. Different specification techniques are used in order to specify the requirements more precisely for different users.

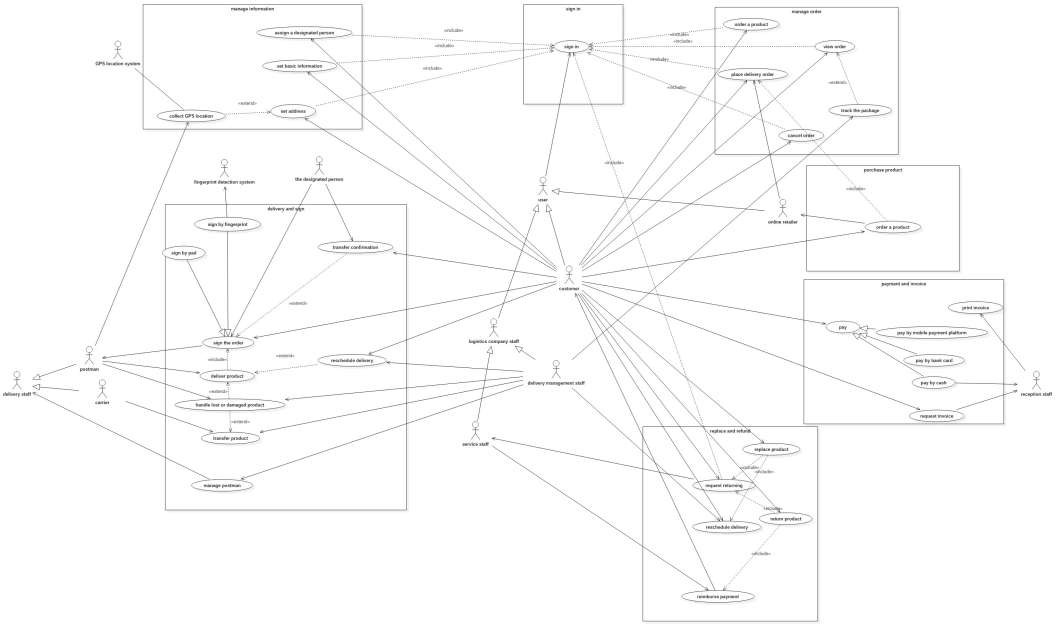
The sixth chapter includes references we study and use in our works.

At last, there is a list of contributions made by each team member.

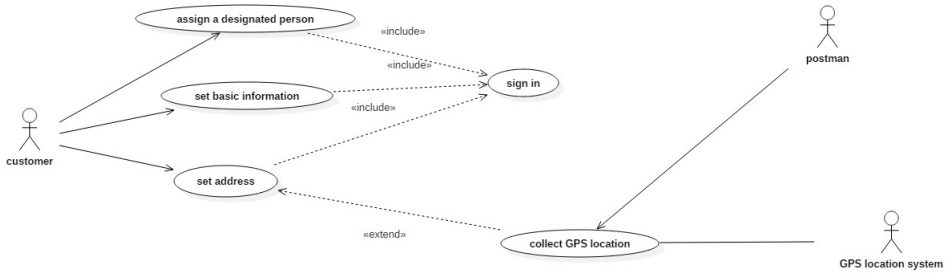
2 Use case modeling

2.1 Use Case Diagrams

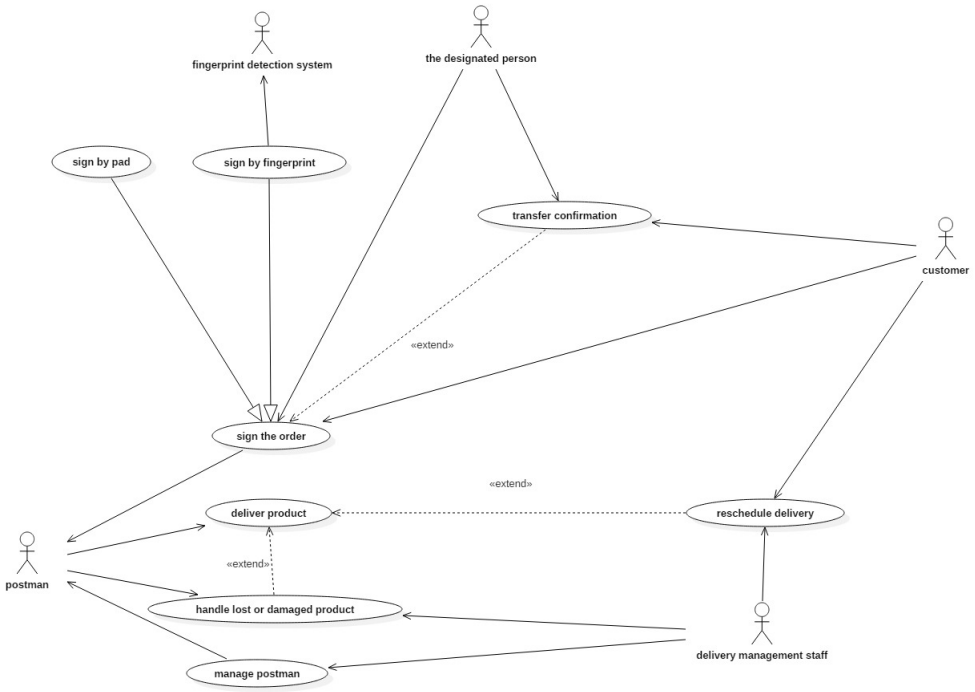
2.1.1 Architecture



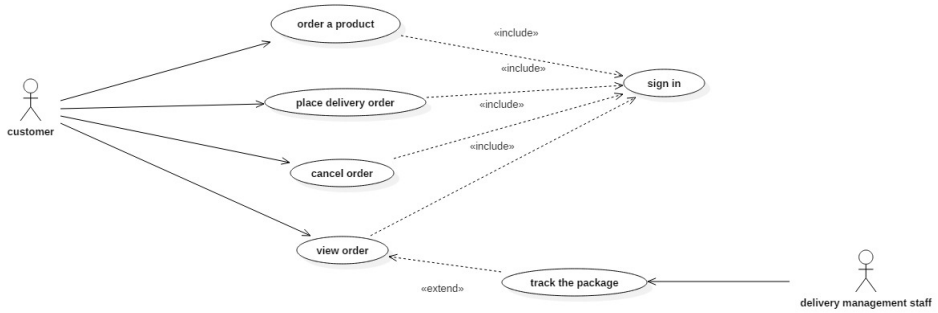
2.1.2 Manage Information



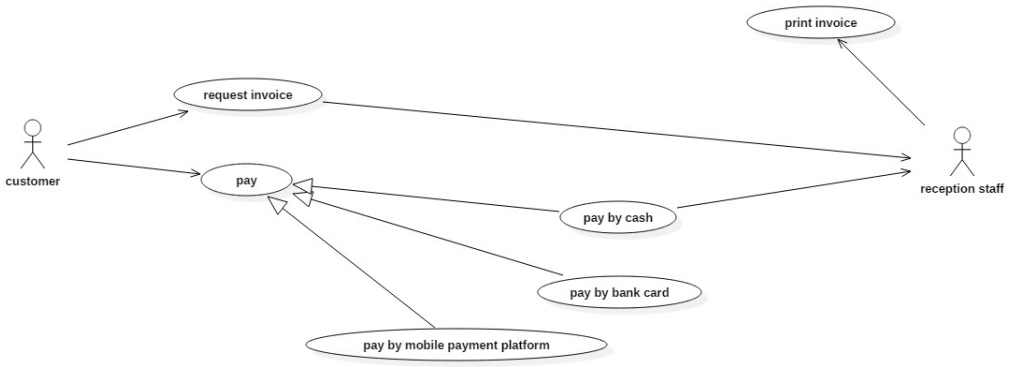
2.1.3 Deliver And Sign



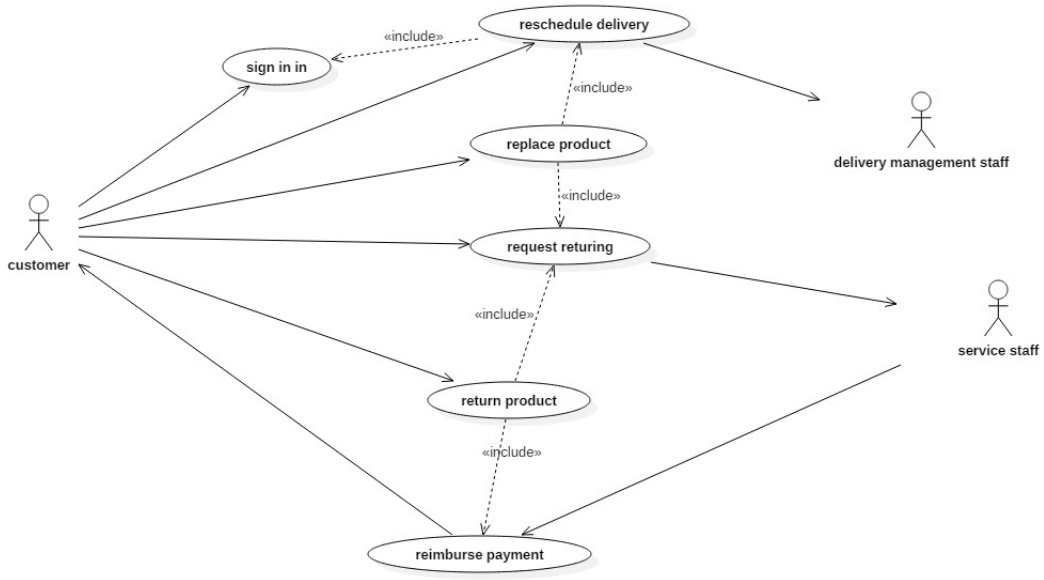
2.1.4 Manage Order



2.1.5 Payment And Invoice



2.1.6 Replace And Refund



2.2 Use Cases Specification

2.2.1 Set Address

Use case: Set Address
ID: UC01
Actors: management staff, postman
Brief description: This case is used to describe how the management staff and postman handle special package when it is damaged or lost during the delivery. It extends ”deliver product” and includes ”record information” and ”apologize and explain”.
Preconditions:
Flow of events: • **Basic flow:** 1. The delivery person would record the information of the product on this system. 2. The management send a message to the customer to explain the situation and make apologies. 3. The customer decides whether to deliver the product at any time without any extra fees or cancel the order. • **Alternate flow:** 3a. The customer does not reply within the prescribed time. 3a1. The order will be canceled automatically.
Postconditions: The order is canceled or the product is redelivered by the request of customer.
Special requirements: The product information should be reported to the management staff in time.

2.2.2 Transfer Confimation

Use case: Transfer Confimation
ID: UC02
Actors: customer, the designated person
Brief description: This use case describes how customer ask someone to receive package for him or her.
Preconditions: 1. Postman is ready to convey the package to customer. 2. Customer is not convenient to sign the package. 3. Customer has someone to help receive package.
Flow of events: • **Basic flow:** [This case begins when customer asks someone to receive package.] 1. Customer transfers confirmation to system by verification code, digital sign or s.th else. 2. System examine authenticity of confirmation. 3. If the confirmation information is verified, system will transfer permission to the designated person to receive package. • **Alternate flow:** 1. If the confirmation has some problem, system will send a message to customer for another confirmation. 2. Customer decides whether to resend confirmation with another try or choose another confirmation way. He or she can also cancel the confirmation at any time.
Postconditions: After getting permission, the designation person can sign the order and takes the package.
Special requirements: Without correct confirmation, system will never allow someone else to receive package.

2.2.3 Reschedule Delivery

Use case: Reschedule Delivery
ID: UC03
Actors: Customer, Management staff
Brief description: This use case describes how to reschedule delivery.
Preconditions: 1. When the customer is not at home and no representative is assigned. 2. When the package is damage or lost and the customer want the product to be delivered again. 3. When the customer is unsatisfied with the product after receiving it and want to have a replacement.
Flow of events: • **Basic flow:** 1. The postman will sent the message back to the server. 2. The management staff will reschedule the delivery upon the agreement with the customer. 3. The management staff will send information to the customer to ensure he or she would be available to receive the ordered product/package. • **Extension point:** "Deliver product" • **Alternate flow:** After receiving the confirming information, if the customer is still busy at that time, the management staff will reschedule the delivery with the customer again.
Postconditions: If the customer is available to receive the ordered product/package at the new scheduled time, the delivery will proceed at that time.
Special requirements: It's important to ensure the information between the customer and the management staff is in common.

2.2.4 Pay

Use case: Pay
ID: UC04
Actors: customer
Brief description: This use case describes how customer pays for his or her product.
Preconditions: Customer has made an order with correct information including address, phone number and so on.
Flow of events: • **Basic flow:** [This case begins when customer is to pay for the product.] 1. Customer asks for payment and choose a way to purchase. 2. System examines the payment information. If there is no error, system will jump to specific payment platform for customer to finish the deal. 3. Customer finishes the payment in the chosen way. • **Alternate flow:** 1. System examines whether the payment way is feasible and safe. If not, system will ask customer to change another payment way or cancel the deal. 2. Customer needs to turn to another way or cancel the deal.
Postconditions: If customer chooses to pay by cash, reception staff will help complete payment on site. And when customer needs invoice, he or she can ask the staff to print invoice.
Special requirements: System must ensure safety of payment environment.

2.2.5 Handle Lost or Damaged Product

Use case: Handle Lost or Damaged Product
ID: UC05
Actors: management staff, postman
Brief description: This case is used to describe how the management staff and postman handle special package when it is damaged or lost during the delivery. It extends deliver product and includes record information and apologize and explain.
Preconditions:
Flow of events: • **Basic flow:** 1. The delivery person would record the information of the product on this system. 2. The management send a message to the customer to explain the situation and make apologies. 3. The customer decides whether to deliver the product at any time without any extra fees or cancel the order. • **Alternate flow:** 3a. The customer does not reply within the prescribed time. 3a1. The order will be canceled automatically.
Postconditions: The order is canceled or the product is redelivered by the request of customer.
Special requirements: The product information should be reported to the management staff in time.

2.2.6 Request Returning

Use case: Request Returning
ID: UC06
Actors: Customer
Brief description: This use case describes how to make a request of returning.
Preconditions: The customer have signed in the system.
Flow of events: • **Basic flow:** [This use case begins when the customer want to return the product.] 1. The customer sign in the system and make a request for returning. 2. The management staff will obtain the information and provide the customer a label containing the address to send it back that also includes the postage. • **Alternate flow:** The customer will have the option to send the package back and complete the deal or to replace the current package with the new one.
Postconditions: If thecustomer prefers to return and complete the order, the payment should be reimbursed. However, if the customer wants to have a replacement, the delivery schedule will be made again upon mutual agreement.
Special requirements: If management staff reimburse the payment, the amount of money should be ensure whether is correct.

2.2.7 Return Product

If the returning request is accepted, then the customer can send the package back according to the provided label and complete the deal.

2.2.8 Replace Product

If the customers are not satisfied with the product, they can have a replacement within 1 month. The customer will have to make request returning to the service staff firstly and then the staff will handle this event immediately.

2.2.9 Reimburse Payment

After receiving and checking the product, the management staff would reimburse the payment to the customer, the money would be sent via third party payment platform like Alipay or online banks.

2.2.10 Reschedule Delivery

This case happens when the the customer is not at home and no representative is assigned or the customer exchanges package.

In both conditions, the delivery must be rescheduled upon mutual agreement.Then the package will be sent to the appointed address and time.

2.2.11 Track the Package

A customer can track his/her package after logging in the system. All relative information, including the state of the product, delivery mans contacts will be available on the system.

2.2.12 View Order

The customers can view the order they placed before in the client application. Also, they can track the package there with the tracking number is displayed.

2.2.13 Cancel Order

When a customer receives an apology and explanation from the management staff for his/her lost or damaged package, he/she can cancel the order without any extra fee.

2.2.14 Delivery Product

If the product was damaged or lost and the customer wants a new one, the product will be delivered again. Also, if the customer wasnt at home

and he or she didnt assign anyone to sign the order on behalf of him, the postman will reschedule the delivery with the customer and deliver the product again.

2.2.15 Order a Product

The customer will have to sign in the system before he or she orders a product, the customer should select the product and the number that he or she wants, and then type in the address or just choose an address that was used before. After this, the customer should pay the bill and submit the form, the system will collects the form and creates an order.

2.2.16 Place Delivery Order

The customer or online retailer can place a delivery order using the system, they will have to sign in firstly and then type in the target address, the receiver name and contact information. After that they can submit the information and the system will create a delivery order. Soon the postman will come to collect the product and give a tracking number to the customer.

2.2.17 Sign the Order

Once the product is delivered successfully to the customer, the customer can check whether the product is in good condition and sign the order by pad or by fingerprint.

2.2.18 Sign by Pad

The postman will offer a pad, so the customer can sign the order on it with his or her manuscript.

2.2.19 Sign by Fingerprint

The postman will offer a fingerprint verification machine to the customer if he or she wants to sign the order using his or her fingerprint.

2.2.20 Sign In

If the customer is unsatisfied with the product after receiving it, the customer will need to sign in the system to make the request of returning. If the customer wants the product to be delivered to a place immediately ,

he or she also has to sign in the system. In a word, if the customer wants to do something in the system, he or she needs to sign in the system.

2.2.21 Pay by Mobile Payment Platform

System examines the payment information. If there is no error, system will jump to specific payment platform for customer to finish the deal. Therefore, if the customer choose to pay by mobile payment platform and there is no error, the deal will be finished.

2.2.22 Pay by Bank Card

If the customer wants to pay by bank card, he or she will be asked to input password and then the deal will be finished.

2.2.23 Pay by Cash

If the customer wants to pay by cash and he or she can pay for the product with enough cash, the deal will be finished.

2.2.24 Request Invoice

After paying for the product, the customer has the right to request invoice and then he or she can submit an expense account, maybe.

2.2.25 Print Invoice

When the customer asks for invoice and the deal has been finished, the staff cannot refuse his or her request but print invoice immediately.

2.2.26 Transfer Confirmation

If the customer is not convenient to sign the package and asks someone to receive for him or her, customer transfers confirmation to system by verification code, digital sign or s.th else. System examine authenticity of confirmation in order to rule out the possibility that the product would be received by some imposter.

2.2.27 Sign the Order

When the customer is at home, he or she will sign the receipt using signature on a pad, fingerprint and so on. And the data of the received product and customer acceptance will be transferred back to the server. The order will be marked as complete.

2.2.28 Collect GPS Location

When the address set by the customer is new to system, the postman will go to the address and collect the corresponding GPS location. If the address is already in, the postman will not come to collection information.

2.2.29 Set Address

The customer can set his or her address any time by logging in the information system. When customer modified the address, system will examine whether the input is valid and whether GPS location is needed to be collected.

2.2.30 Assign a Designated Person

If the customer is not at home when the postman delivers the product, the customer can assign a designated person the sign the order on behalf of the customer on the premise of transferring confirmation.

2.2.31 Set Basic Information

The customer can set his or her basic information such as name, sex, phone number and portrait.

2.2.32 Transfer Product

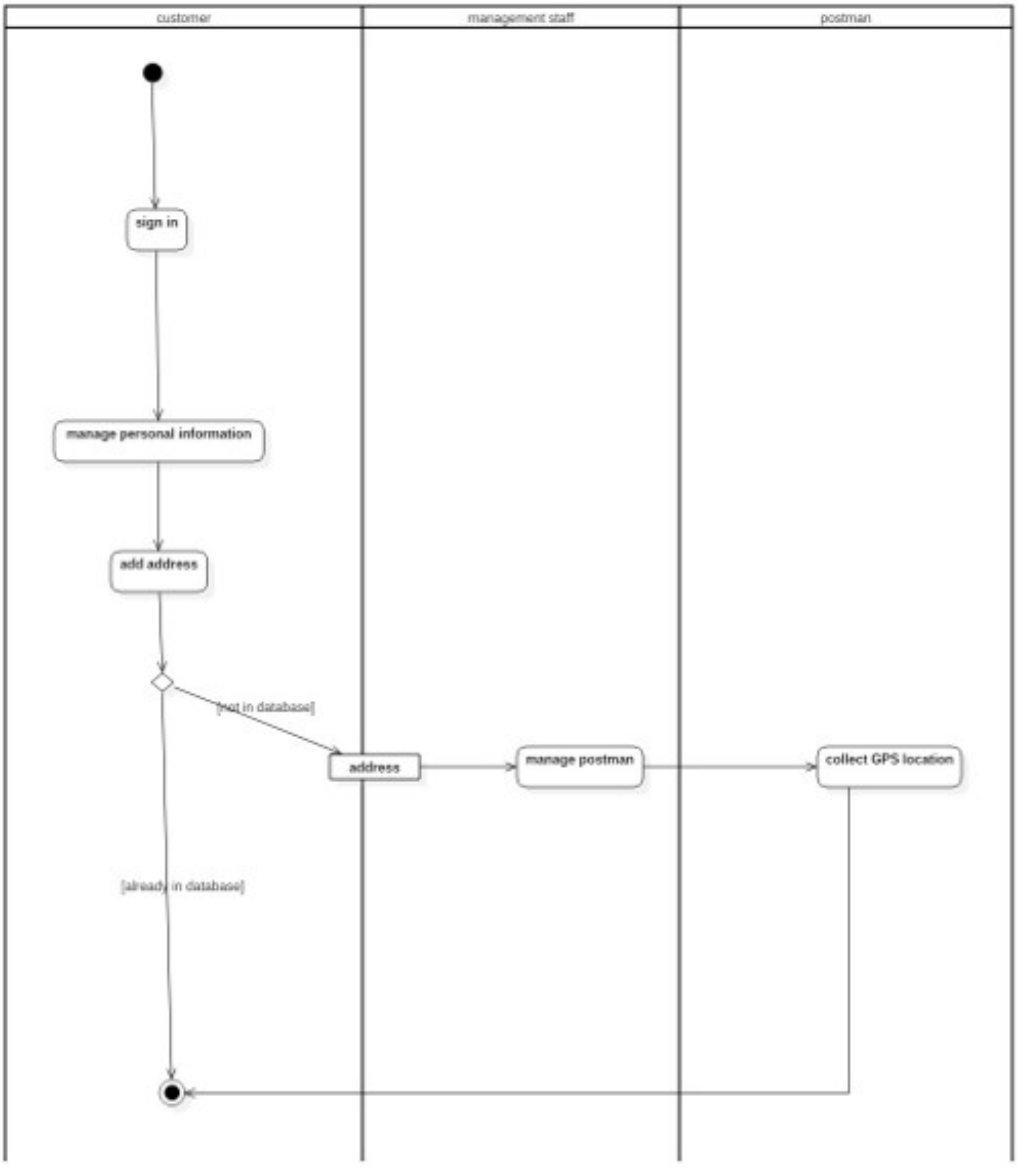
During the transportational process, the product will be carried from one station to another. The carrier will classify the product and transfer it.

2.2.33 Manage Postman

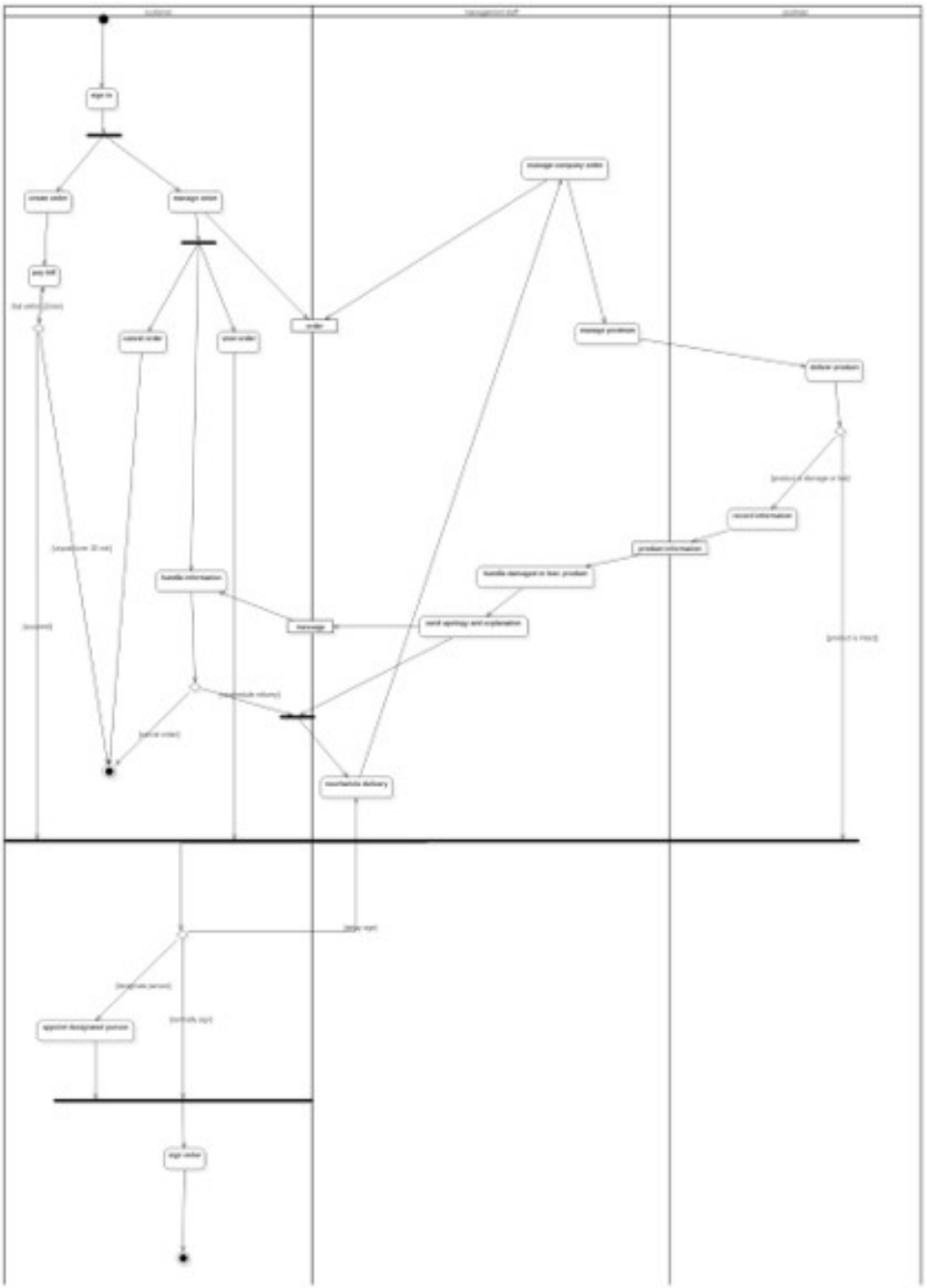
The delivery management staff can manage postmen backstage. In this way, delivery management staff can be aware of the status and dispatch the postmen to handle events.

2.3 Activity Diagrams

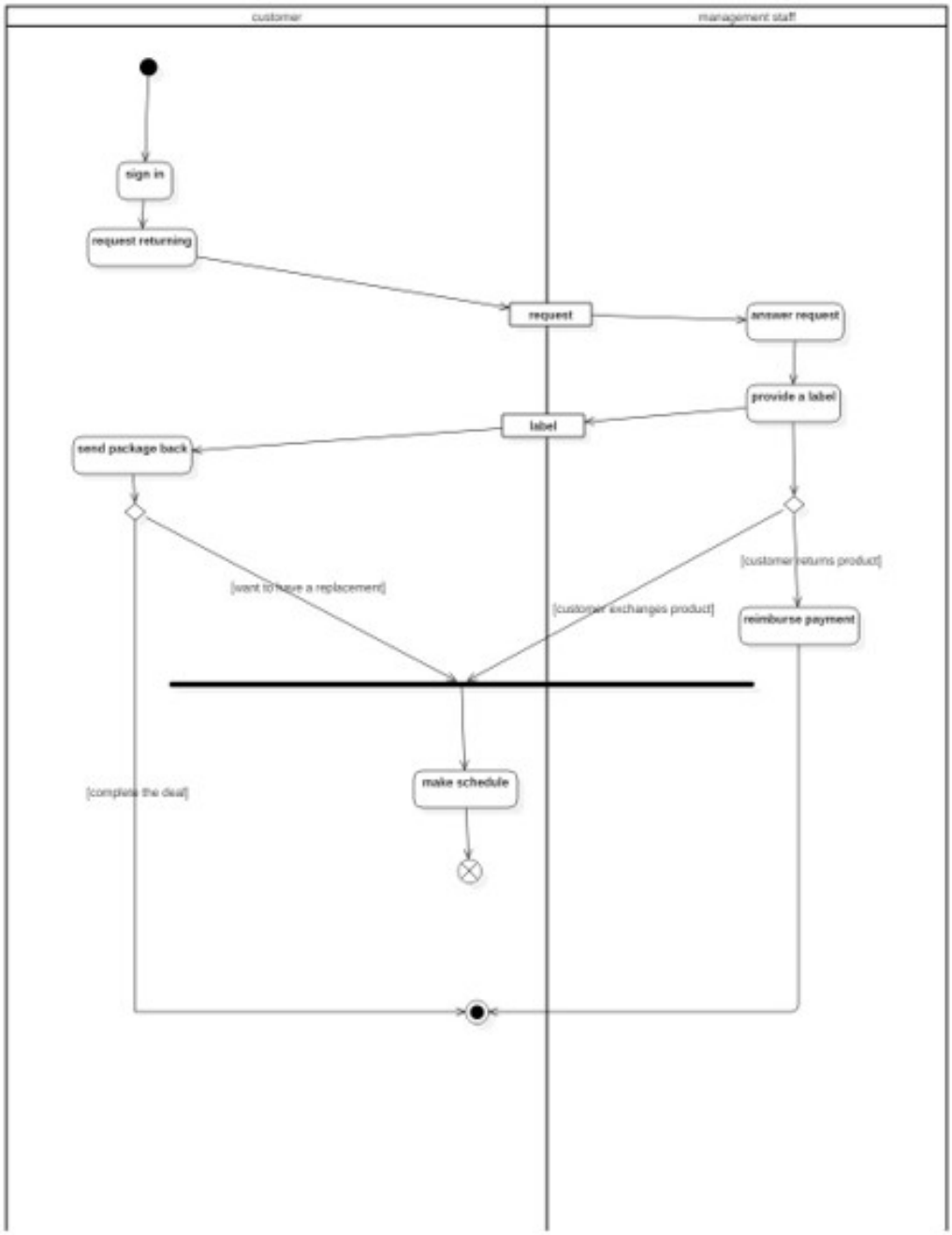
2.3.1 Load Information



2.3.2 Order and Delivery



2.3.3 Return or Exchange Product



3 Glossary of terms

3.1 Definitions, acronyms, and abbreviations

Terms	Definition
System	This system is built for package delivery, including server for staff in the logistics company and client for customers
User	Someone who interacts with system
Administrator	User who is given specific permission for managing and controlling the system
Logistics company	Company that is responsible for delivering products/mails/documents to customer locations nationwide
Management staff	User who is given right to mange orders, appoint postman and do other administrative works on the system
Service staff	User who is given power to communicate with customers and offer before and after sale service via the system
Transfer station	Station that stores contemporary packages from one place to another
Postman	User who is given authority to access customers address and other necessary information and responsible for package delivery
Designated person	Person who receives the product for someone with his confirmation
Address	Locations where a customer can receive his package
Customer	People who place orders with the logistics company
Order	An order includes the customers personal information, the product description and the state of the delivery
Package	Product which logistics company gets from customer and needs to deliver.

Invoice	An itemized statement of money owed for the ordered product. Customer can ask it from reputation
Label	A piece of message containing the address to send package back
GPS	System that can locate position
GPS-Navigator	An installed software on mobile phone which could provide GPS connection and data, show locations on map and find paths from current position to defined destination
Fingerprint detection system	System that can detect ones fingerprint
Web-Portal	A web application which present special facilities for logistics company staff
Server	The server stores data of personal information, received product and customer acceptance.

4 Supplementary specification

4.1 Functionality

Customer can register and sign in on the app, also they can edit their information and delivery address.

Through the background server, management staff can know the situation of all postman, which is easy to manage.

4.2 Quick and Accurate Service

It's easy to edit the delivery address.

The customer demand service such as query the logistics information and order status should be quick and accurate.

The after-sales services like Changing or refunding should be fully functional.

4.3 Applicable Platform

For customer and postman: IOS and Android, which satisfy the whole mobile platform.

For management staff: support all kinds of mainstream browsers, we recommend Chrome, Firefox and so on.

4.4 Performance

Payment: Support Wechat, Alipay, Bank card, but not Baidu or others that have low share of the market.

Server: Using Node.js framework, for Java EE is not suitable for our requirement.

Response Time: We expect the response time for a transaction within 12s, the longest interaction time is supposed to be at most 12s. Also, the interaction of some transaction that consume large resources should be within 8s.

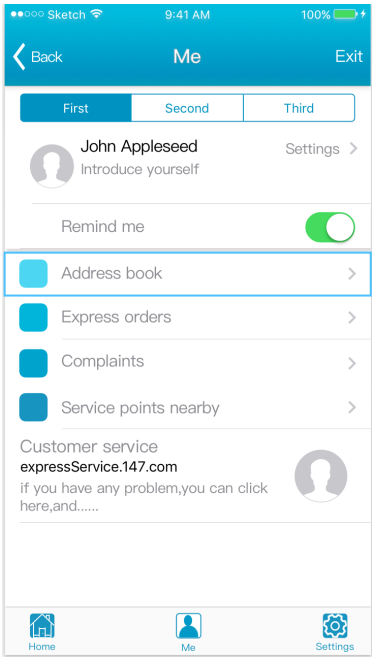
4.5 Security

Using 3DES to encrypt the account and password, which can strong security.

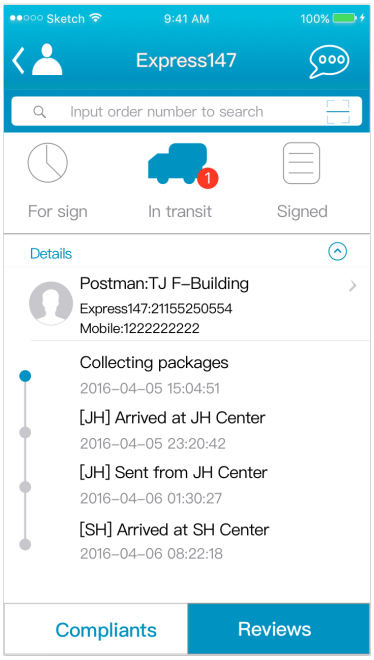
5 Initial snapshots of the system's user interface

5.1 Customer

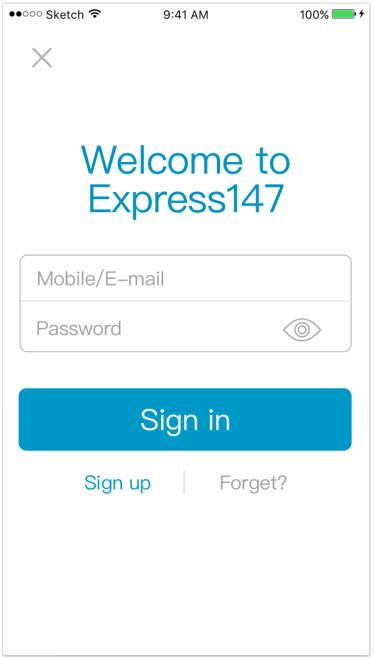
5.1.1 Main



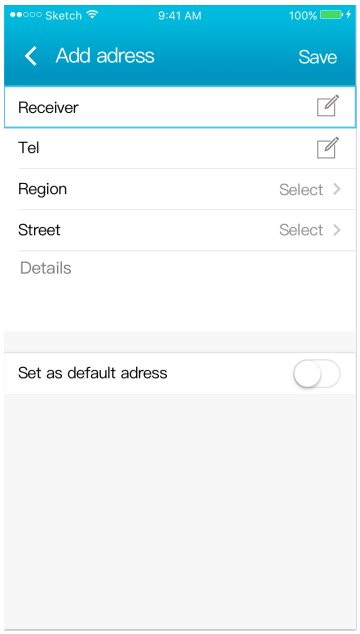
5.1.2 TransitInformation



5.1.3 Sign In

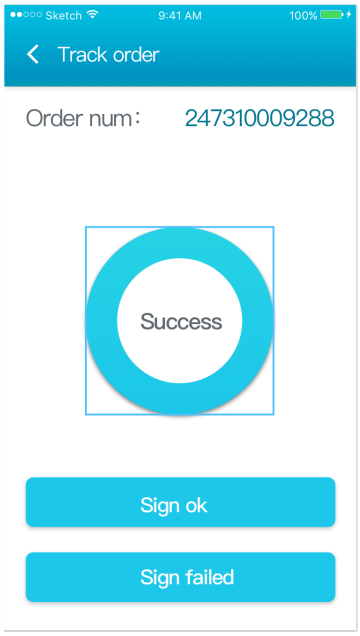


5.1.4 Add Address

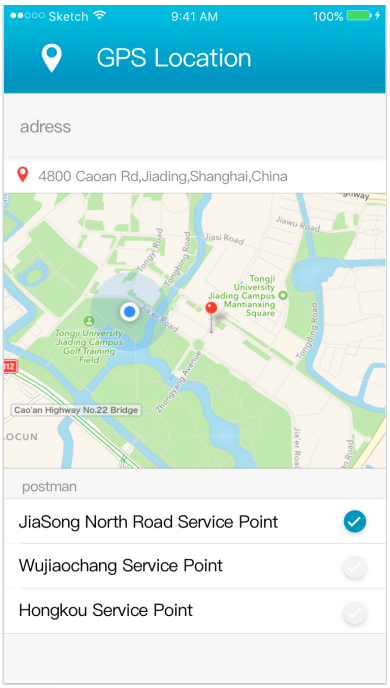


5.2 Postman

5.2.1 Track Order

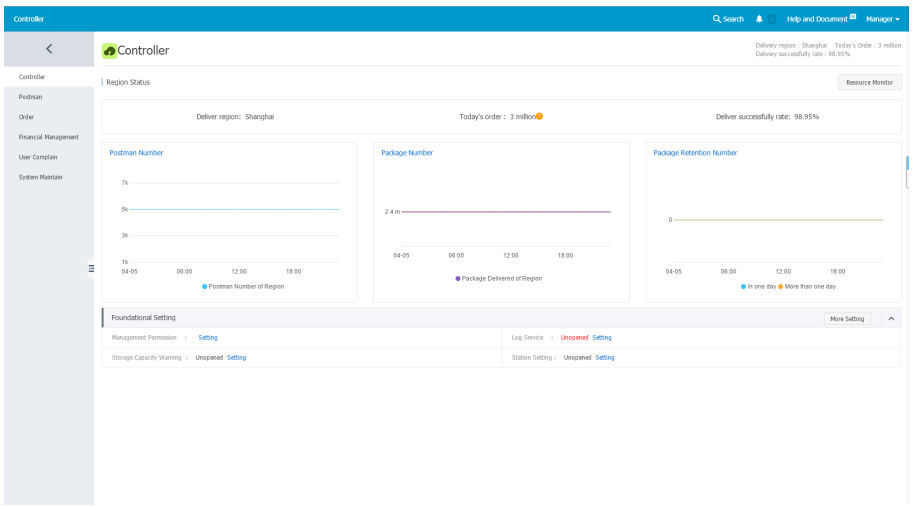


5.2.2 GPS Location

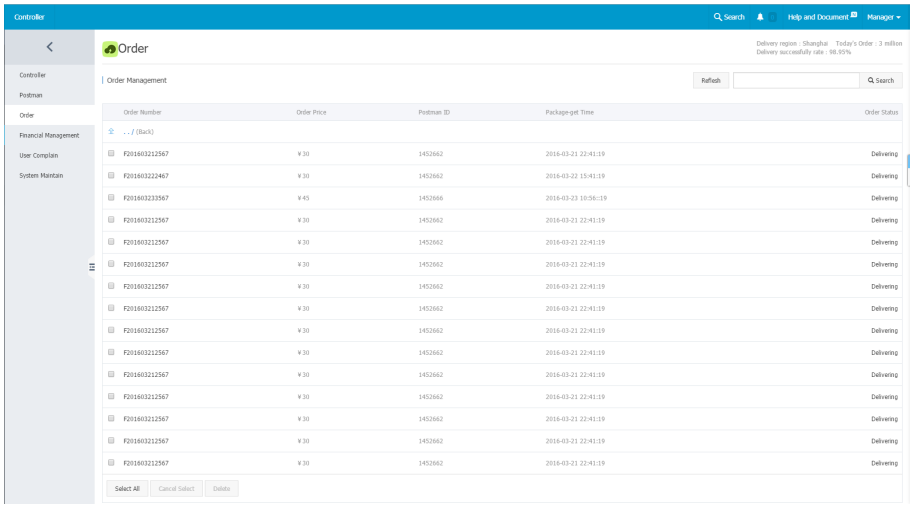


5.3 Management Staff

5.3.1 Controller



5.3.2 Order



6 List of References

6.1 System design and implementation of third party logistics management based on electronic commerce

In view of the current confusion fusion problem of e-commerce and logistics management system, puts forward a conception of integrated B/S mode of the third party logistics management system based on J2EE, and taking as architecture to carry on the detailed design to the system, the realization of distribution management, including scheduling management, function. [1]

6.2 Design and realization of logistics management system based on uml modeling technology

This paper briefly introduces the UML modeling technology, describes the design and the modeling process of logistics management system and applies the B/S pattern and the.NET technology, SQL sever database, it also discusses the realization method of logistics management system based on the environment of the Internet. [2]

References

[1] LI Min. System design and implementation of third party logistics management based on electronic commerce. *Electronic Design Engineering*, (19):107–109, 2015.

[2] D. U. Wen-Jing. Design and realization of logistics management system based on uml modeling technology. *Journal of Shenyang Normal University*, 2011.

7 Contributions of team members

- Zeng Jiaxing: use case diagram, activity diagram, background server UI, supplementary specification
- Li Yichao: use case diagram, activity diagram, description, typesetting
- Liu Lidong: use case, activity diagram, ppt
- Yi Siqi: UI, use case diagram. activity diagram

Every member in our group makes equal contribution.