

1. Title Page

Project #1. Software Requirements Specification (SRS)

Team 9:

Rakhman Asmatullayev	20180830
Hongxiao Yao	20196360
Umar Taufiqulhakim	20170896
Hyunseung Lim	20170548

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2. Introduction

In this document Software Requirements Specifications of the “Goostore” flea market Android application is given. The primary idea of this product is to provide KAIST students with a useful platform for selling and buying many kinds of things.

KAIST students, especially exchange students often have things that are no longer used after their short stay but may still be useful and in good condition, and it will be a huge waste for the students to just throw them away or abandon them somewhere on campus.

There are many similar Apps and websites which have been realized the flea market functions, such as Xianyu, Craigslist and so on. What's more, some physical flea markets have also existed on campus and are very popular among Korean students for the cheap price and excellent quality of goods especially the textbooks. However, as foreign students, we always need to face plenty of problems to find the flea market or what we want in the market, like the language and limited information resources. Hence our App is specially designed to help we foreign students to get access to the local flea market and obtain what we like much easier or sell things we do not need anymore but still meaningful to others.

As for our originality of this App, firstly, our App will focus on the huge demand of campus students, such as second-hand textbooks, bicycles, small furniture, electronic products and even housing rental information for foreign students. Secondly, auction-based system will be implemented, and the sellers can either just set a fixed price for their goods or choose to use our auction system to get more profits. Meanwhile, the buyers can also set their expected price before the beginning of auction and they will get the item after the

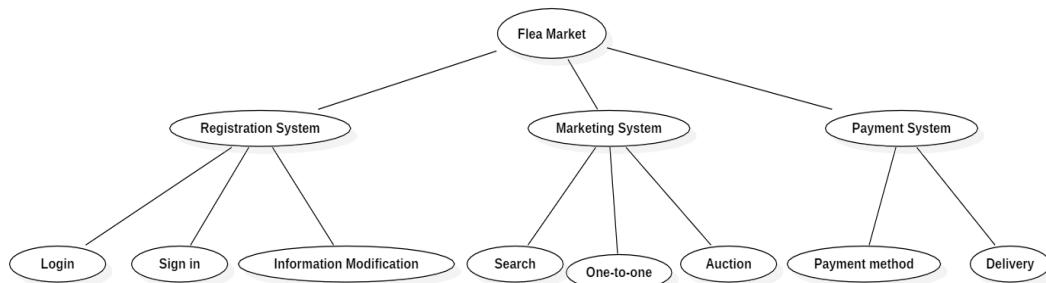
auction if they have supported the highest price. (If there are several persons who have set the same price, the one who first provided the price will be the winner.) The third one is the effective quality assurance measures. After the buyers pay for their goods, our system will temporarily have custody over these money which is like the mechanism of credit card pre-authorization, and the sellers can get this money only after the buyers have checked the goods and make sure they are in good conditions. More importantly, the traditional flea market is seller oriented and sometimes the buyer can not find exactly what they want, so our App can provide this platform where our users can make their personal requests and expected price, while our sellers can also provide them with suitable goods. In addition, our App will imports credit rating system for sellers which is based on the trading volume they have made, and the higher credit rating means the information of your merchandise will get more chances viewed by buyers. All in all, the original intention of our App is to provide our foreign and even Korean students with more convenient service and help them better save living expenses in Korea.

Vision Statement: To be the preferred flea market in KAIST ever.

3. Overall Description

A. Product Perspective

Our “Flea Market” may sound like a follow-on member of product family of similar APPs, and there are also some common features or similar functions with the other APPs or websites indeed. However, it is also a self-contained innovation by our team members. Since our object users are mainly from different countries and areas with diverse living and network usage habits, it is really difficult and full of challenges to design a Flea Market APP that suits most people’s needs. Hence when we design our APP, we always take the convenience, effectiveness, environmental protection issues and language utility as our priority. To practice our purposes, we try to simplify the operation processes and abandon many excess functions or features based on some traditional websites or APPs, and to make our product more professional and directionality, the APP will mainly focus on how to establish a more convenient and environmentally friendly community.



B. Product Features

- Auction-based selling system: Seller can opt to sell their popular items for the highest offered price
- Effective quality measurement: To ensure buyer satisfaction, our system will temporarily took custody of the buyer's money until buyer has confirmed their satisfaction toward the good

C. Operating Environment

- Product will be available on mobile devices at Android platform with API level 19 or higher (KitKat, Lollipop, Marshmallow, Nougat, Oreo, Pie, Android 10 versions)

D. Assumption and Dependencies

- ❑ Since the application is based on Android environment there is a need for the well performance Android phone.
- ❑ It will be assumed that users will possess decent internet connectivity.
- ❑ It is assumed that the user is familiar with the Android phone and can operate it well.
- ❑ The user is assumed that own the basic ability of English reading and writing.
- ❑ It is assumed that the user is a student in KAIST with KLMS ID.
- ❑ Assuming that the item users want to buy has already existed in our platform and can be traded.
- ❑ When the user decides to pay for the good, it will be assumed that our APP has got the credit card and mobile payment authorizations from banks or other departments.

4. System Features

A. Functional Requirements

1. Account Login and Creation Function

- The system requires the function that enables users to create their own accounts.
- The system requires the function that enables users to authenticate themselves when creating an account (Using email or KLMS ID).
- The system requires the function that allows users to modify the information in their accounts.
- The system requires the function that allows users to login and logout of their accounts.

2. Auction Function

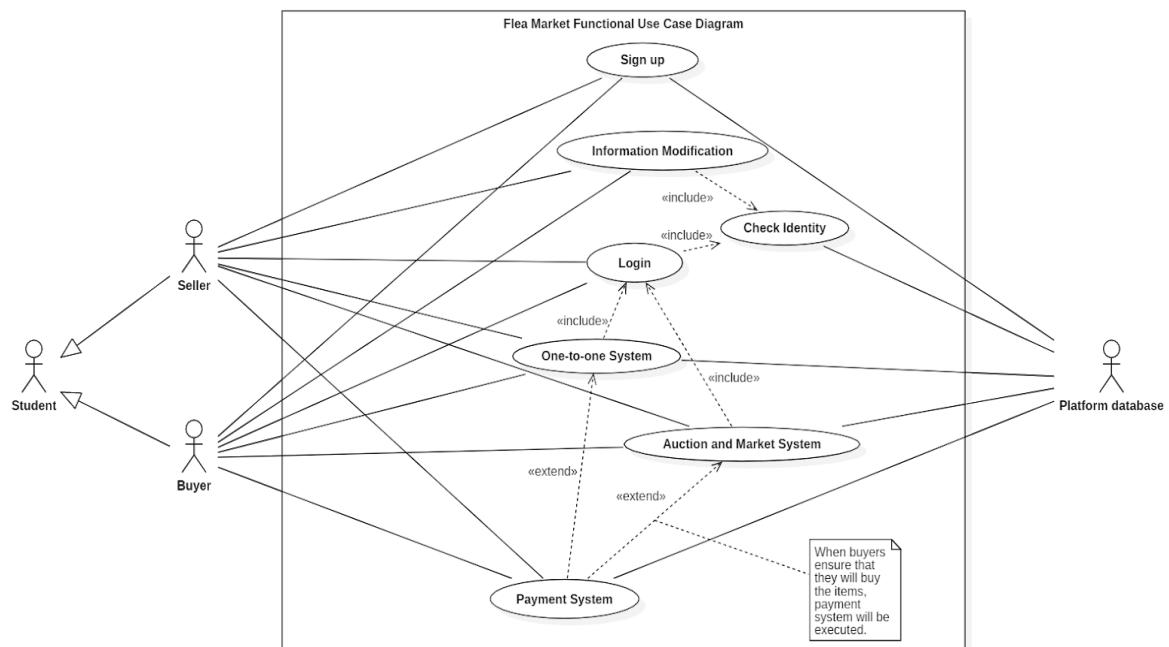
- The system requires the function that allows sellers to auction off their good.(or sell one to one)
- The system requires the function that the seller to set reserve price and deadline for the auction.
- The system requires the function that enables buyers to search the ongoing auctions.
- The system requires the function that enables buyers to bid for an auction.

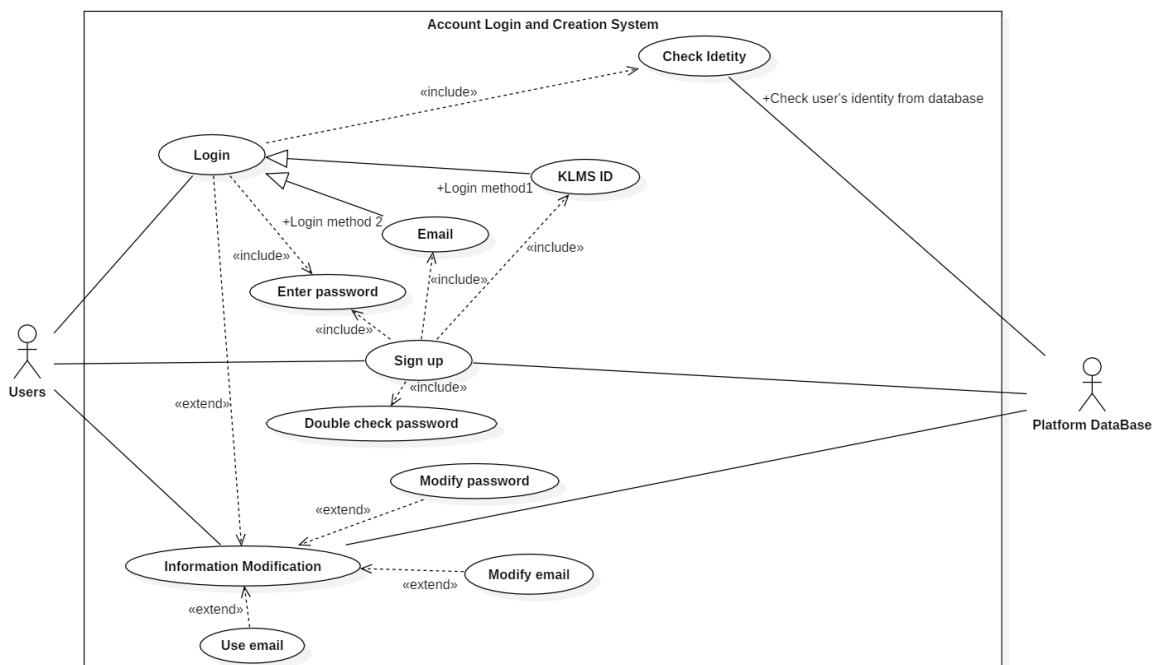
- The system requires the function that enables buyers and sellers to check current price.

3. Payment Function

- The system requires the function that provides virtual accounts that can be deposited by buyer.
- The system requires the function that enables buyers and sellers to set good delivery methods.
- The system requires the function that let both buyer and seller confirm that it is a successful transaction of goods.
- The system requires the function that send money to buyer or seller, depending on whether they confirm or some other situations.klms

B. Use Case Diagram & Descriptions

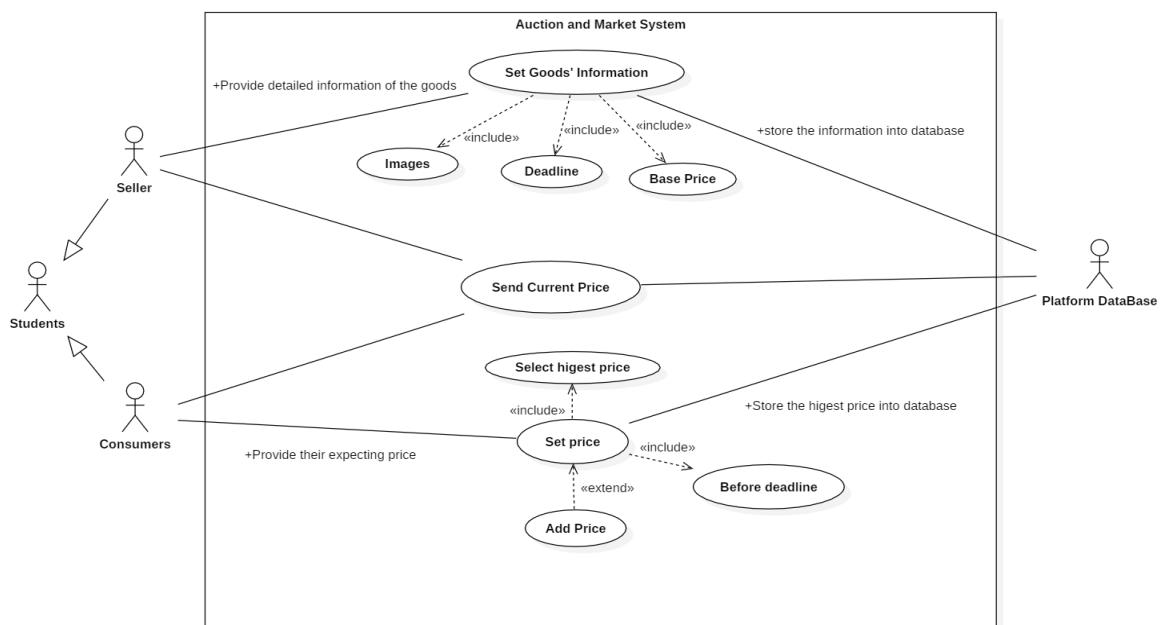




Use Case Name	Account Login and Creation System
Related Requirements	
Goal in Context	The student who expects to sell something which they will never use again or get some tools or goods at a preferential price requests an account and uses this account to trade or search for useful information.
Preconditions	The student who wants to use this APP needs to own KLMS ID, effective email and appropriate proof of identity at first.
Successful End Condition	An account is created and stored in the database of our platform. Or successfully login somebody's account with their unique KLMS ID or email and correct password. In the latter case, someone modifies the password through the email from our platform.
Failed End Condition	The application for an account is rejected because the lack of KLMS ID. Somebody can not log in their account for the wrong password, KLMS ID or email. Somebody can not modify their password because of fallacious email.
Primary Actors	Users
Secondary Actors	Platform Database
Trigger	The user needs to apply for an account, login or modify his or her password.

Main Flow 1	Step	Action
	1	The user asks the system to create an account.
	2	The user enters his or her detailed information.(KLMS ID, Email and Password)
	3	The user's information is checked using database.
	4	The user's information is stored into the database of our platform.
	5	The new account is created.
	6	The account's details are emailed to the user.
Extensions	Step	Branching Action
	1	The user's KLMS ID can not be verified.
	2	The user's account application is rejected.
Main Flow 2	Step	Action
	1	The user asks the system to log in his or her unique account.
	2	The user enters his or her KLMS ID or email and password.
	3	The user's information is checked by our platform's database.
	4	Successfully login.
Extensions	Step	Branching Action
	1	The database of our platform does not verify the user's information.
	2	The user's application for login is rejected.
Main Flow 3	Step	Action
	1	The user asks the system to modify his or her information of account.
	2	The user does not forget the account's password and successfully login.
	3	The user changes the account's information, and the database updates its information.
Extensions	Step	Branching Action
	1	The user forgets his or her password of account.
	2	The user chooses to enter his or her email.

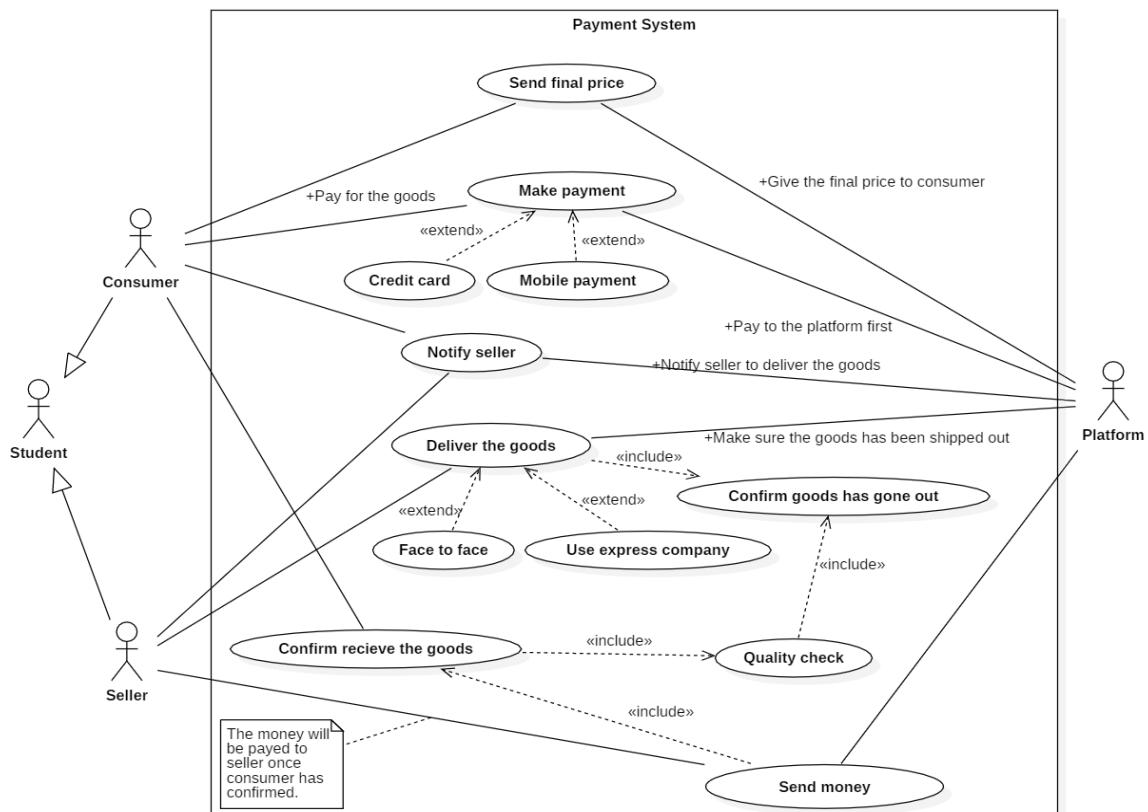
	3	The database checked this email.
	4	Our platform sends the user an email to help modify the password.
	5	The user enters the new password and double check password.
	6	The database updates the information of user's account.
	7	Our platform sends the user an email to notify him or her and the password has been modified.



Use Case Name	Auction and Market System
Related Requirements	This system requires every seller and buyer have been registered through our Account Login and Creation System.
Goal in Context	The student who wants to sell something with a nice price can puts the item on our APP, and our APP will sell this item to someone based on the seller's request(Auction or One to one)
Preconditions	The users have been registered and verified the identities. What's more, they do not have bad credit or fraud history.
Successful End Condition	The seller successfully put his or her item on our platform and the buyers can get the item through the auction or one-to-one.
Failed End Condition	Because seller or buyer has bad credit or fraud history, they could not sell goods or buy something through our platform. The seller has the item off the middle of the auction or the buyer abandons to pay for the item.

Primary Actors	Seller and Buyer	
Secondary Actors	Platform database	
Trigger	The user wants to sell or buy something at a preferential price.	
Main Flow 1	Step	Action
	1	The seller selects the item to put on our APP.
	2	The seller needs to fill some necessary information and price of the item, and chooses the way of sale.(Auction or one-to-one)
	3	The information will be updated in our database and put the current information on our APP.
	4	In the auction system, the buyers firstly set their expecting price or add price before deadline.
	5	The system will select the highest price automatically and updated the price in database, and our platform will show the current price to both sellers and buyers.
	6	After the deadline, the item will be the buyer who set the highest price.
	7	Jump to next system.
Extension 1	Step	Branching Action
	1	If no buyer chooses the item after the deadline, the information of the item will be erased from the platform.
	2	The transaction will be closed.
Extension 2	Step	Branching Action
	1	If the buyer abandons the payment, the system will give this item to the buyer who provides the second highest price.
	2	The platform will send an email to the buyer to remind him or her.
	3	Jump to next system.
Extension 3	Step	Action
	1	The seller selects the one-to-one method for sale.
	2	The buyer chooses the item.

	3	The buyer fill the payment information.
	4	The system will remind the seller to prepare to deliver the item to the buyer.
	5	Jump to next system.
Extension 4	Step	Branching Action
	1	The buyer abandons the payment.
	2	The system will put the item on the platform again.



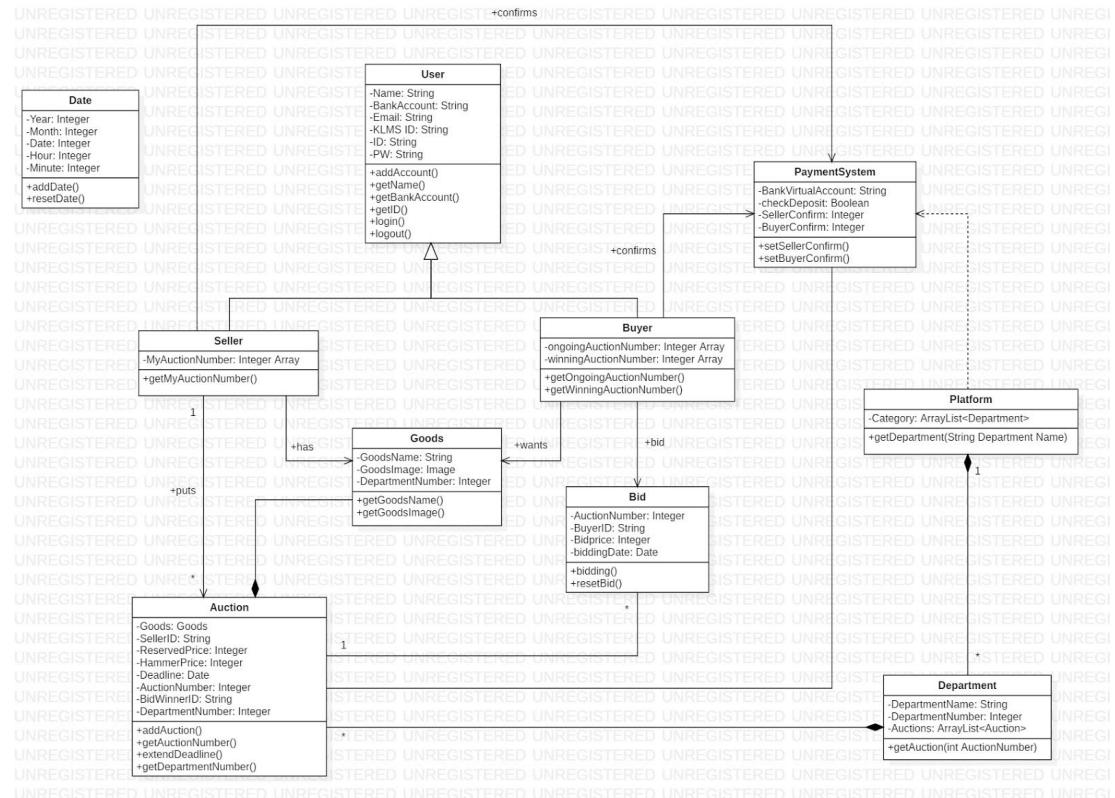
Use Case Name	Payment System
Related Requirements	This system is based on the former two systems, so it should be connected to the Account Login and Creation system and Auction a Market System.
Goal in Context	The buyers who have selected their biased items need to pay for the goods and wait for them delivered from sellers. And our platform needs to ensure transaction processes are safe and reliable, so we introduced deposit mechanism and double check mechanism to protect our users interest from threatening and losing.
Preconditions	The buyer has selected the item or supported the highest price after deadline.

Successful End Condition	Both buyers and sellers confirm they have received the goods or delivered the goods, and buyers make sure the goods are in good condition. Then money will be paid to the seller by our platform. If buyers have received the goods and make sure they are in good condition but forget to click the confirm button, then the seller can give feedback to our platform. If the situation is true, the money will be paid to sellers after 5 days.	
Failed End Condition	Buyers abandon to pay for the goods. Buyers do not receive the goods in 5 days. Buyers think the items are in poor quality. Sellers do not confirm that they have delivered the goods in 5 days. Sellers abandon to sell the items.	
Primary Actors	Seller and Buyer	
Secondary Actors	Platform database	
Trigger	The buyers have selected their interested goods.	
Main Flow	Step	Action
	1	The buyer selects the item on our APP.
	2	The buyer needs to fill some necessary information and choose the postal methods.(may include extra fee), and pay for the item(credit card or mobile payment)
	3	The information will be updated in our database and the money will be kept safely by our platform.
	4	The platform will send the address and the postal method to sellers.
	5	After the sellers have send the goods successfully, they need to click the confirm button and the platform will inform the buyers that their goods are on the way.
	6	After buyers receive the goods, they should check the condition of goods and click the confirm receipt button.
	7	Our platform will give the money to sellers.
	8	The transaction will be done.
Extension 1	Step	Branching Action
	1	If buyers fill the wrong address or other information, and also notice us.

	2	The transaction will be closed, and give the chance for buyers to change the information.
	3	Then the transaction will be continued.
Extension 2	Step	Branching Action
	1	If the buyer abandons the payment, the system will close the current transaction.
	2	The platform will send email to the seller to remind him or her.
	3	Jump to last system.
Extension 3	Step	Action
	1	If buyers do not receive the goods in 5 days and the situation is true after the platform confirmation.
	2	The platform will remind the sellers.
	3	The sellers do not respond in a day, the transaction will be stopped.
	4	The money will be back to buyers by our platform.
Extension 4	Step	Branching Action
	1	If buyers think the goods are not in good condition, they can feedback to our platform.
	2	The platform will remind the sellers.
	3	The goods will be back to the sellers.
	4	The transaction will be stopped.
	5	The money will be back to buyers.
Extension 5	Step	Branching Action
	1	If buyers forget to confirm and do not give any feedback to our platform in 5 days after they have received the goods.
	2	The money will be sent to the sellers automatically.
Extension 6	Step	Branching Action
	1	If sellers do not confirm that they have sent the goods out in 5 days.

	2	The platform will remind them.
	3	If sellers do not response in 2 days.
	4	The transaction will be closed.
	5	The money will be back to buyers.

C. Domain Model



D. Sequence Diagram

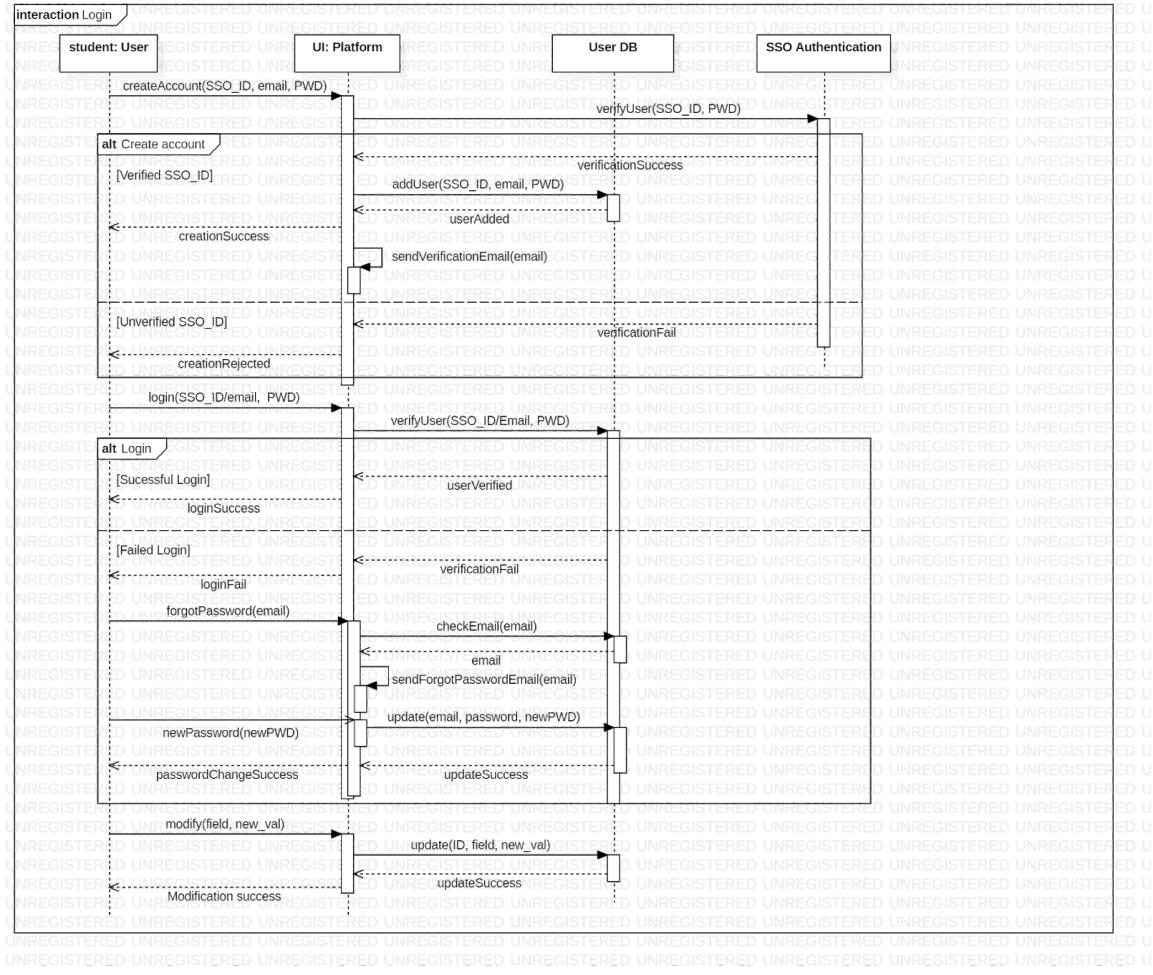


Figure D.1 Sequence diagram for Login Function

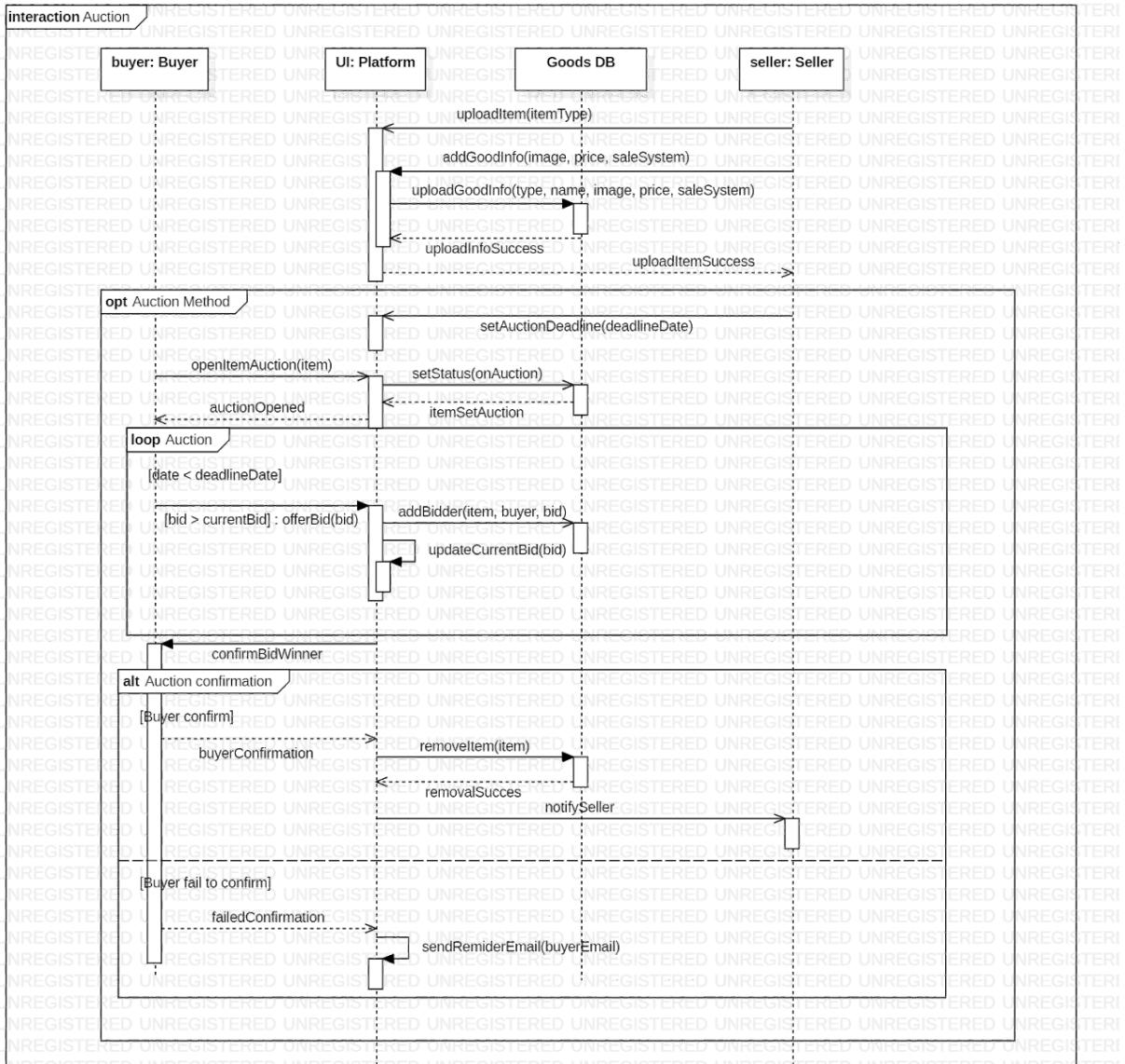


Figure D.2 Sequence diagram for auction function

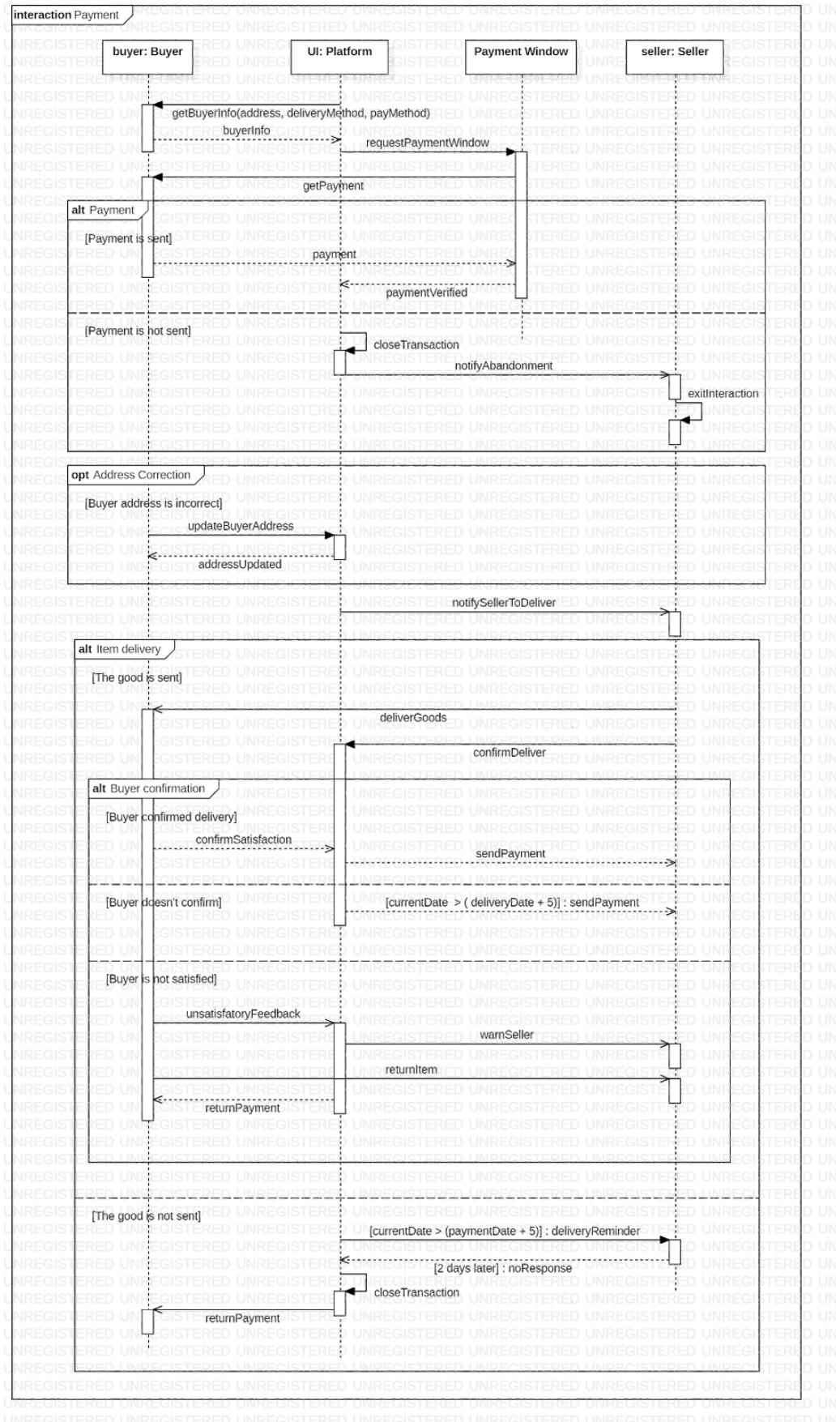


Figure D.3 Sequence diagram for payment function

5. Preliminary User Manual

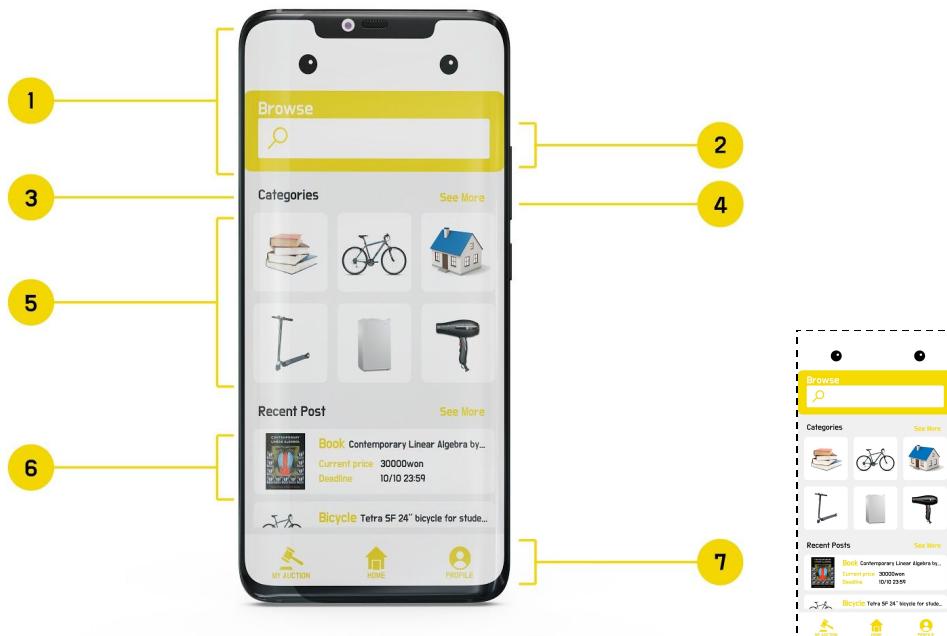
1. Target user

- ❑ Our target users are foreigners in KAIST.
- ❑ Among them, we have chosen exchange students as our main target.
- ❑ Our target can also be extended to KAIST's general students.
- ❑ Android phone users

2. Design direction of UI

- ❑ We will set English as the default language for target group to use.
- ❑ Even app displays many features with icons and uses pictures to describe goods.
- ❑ Our user interface refers to guidelines from Google to make a good human interface. <https://developer.apple.com/design/human-interface-guidelines/>

3. Expected GUI



① Our app Goostore used Kaist's mascot, the goose, in its design. (It also means selling goods with 'goods + store') Therefore, black, white, and yellow were used as the main colors.

② Input focus that follows the order of the visual layout usually flows from the top to the bottom of the screen. Like many other search portals, we created a search window at the top.(Using the beak of goose.) The magnifying glass icon makes it easy for users to see that this is a search window.

③ Just below is a part where users can choose the category, which is equally important.

④ If users want to see more categories, press the 'see more' button. We suggest an easy way for users to see more categories naturally in view of the usage flow.

- ⑤ Express categories with images so that various users can intuitively identify categories. We have placed categories in the order of our thinking high-demand goods and can be changed later through user research.
- ⑥ Users can see the auction in real time and simply see the category, name, current price, closing time, etc.
- ⑦ Design guidelines allow navigation bars to go under the screen these days. Quick setting has my actions, home, and profile buttons that many people use often. In particular, the home button is in the middle.

6. Acceptance Criteria

Checklist for things to be done:

Account login and creation

- User can sign up and login using either SSO or email
- In case of forgotten password, user can change their password using their emails
- Confirmation email should be sent to users after their account registration or modification
- Using link provided in the given confirmation email, users should be able to add information (such as address, phone number, etc.)

Market system

- Seller should be able to upload their good's information, including name, pictures, and price
- Seller can modify the good information before the auction or before the buyer pays for the good in one-to-one system
- Seller should be able to choose their preferred selling method, either auction or 1-to-1 method
- Seller's good should be displayed in the marketing system
- If auction method is chosen, seller should be able to set the deadline of the auction (less than 2 days)
- After the deadline, if no buyer choose this item, the seller will be notified and the information will be erased from the marketing system
- When a buyer chooses to buy a good with auction method, they should be able to set their bid price, and it must be higher than the current highest price
- The buyer can quit the auction halfway
- When another buyer puts higher bid price, the other buyers should be notified
- After the deadline, the system should notify the buyer with the highest bid price to pay and the seller with the final price

Payment system

- Both the highest bidder on an auction system and a buyer 1-to-1 method should be redirected to a window where the buyer can select their preferred delivery method and add/modify their address
- If the highest bidder abandons to pay for the good, our platform should notify the second highest bidder that ready to pay for the good

- If the buyer abandons to pay for the good in one-to-one system, the order will be closed and the seller will get a notification from the platform, and the seller's good will be shown in the platform continually.
- Buyer should be able to make a payment using either credit card or mobile payment
- If the password of buyer's credit card or mobile payment is wrongly entered more than 5 times, the buyer will be notified that they can not pay with this card in 24 hours and should change to another card or other payment methods
- Once they finished their payment, a notification should be sent to the buyer regarding the completion of the payment
- A notification should be sent to the seller to deliver the good
- Once the seller complete their delivery, they should be able to confirm that the good has been sent out
- Once the seller forget to deliver the good or forget to confirm in 2 days, our platform should notify him or her. If the seller does not reply in 1 days, the trade will be closed and money will be returned to buyer
- After the buyer receive the good and have them check the good's condition, the buyer should be able to confirm that they are satisfied with the good
- If the buyer does not receive the good in 5 days or forget to confirm, our platform will send him or her email to confirm. If the buyer does not reply in 1 day, the money will be sent to the seller
- Payment should be sent to the seller after both parties confirmations have been given

7. Non-functional Requirements (Quality Attribute)

1. User Interface and Human Factors

- There are two types of users who will be using the system: sellers, who want to sell their items, and buyers, who want to buy something new
- It is important for the system to be easily understandable so that any user will know what to do without any tutorial
- Any input will be checked twice by the system
- All input and output of the system will be available only inside the application at mobile device

2. Documentation

- Requirements: statements that identify attributes, capabilities, characteristics, or qualities of a system
- Technical: documentation of code, algorithms, interfaces, and APIs
- End user: manuals for the end-user, system administrators and support staff

3. Hardware Considerations

- System is proposed to be used on mobile devices at Android platform with API level 19 or higher (KitKat and later versions)
- Device is proposed to have at least 50Mb of free space

4. Performance Characteristics

- System should respond within 2 seconds
- System is proposed to use internet connection at speed about 250 Kb/s

5. Error Handling and Extreme Conditions

- System should check the input for a correct(expected) type and output an error message for improper input
- System may have a delay when working at low internet connection, but it still should work properly

6. System Interfacing

- Input comes only from users directly and no others systems are used for input
- Output goes only inside the application and doesn't go outside the system
- When user uploads the image for the product to sell, it should be of type *.jpg or *.jpeg, and its' size should be no more than 2 Mb.

7. Quality Issues

- App is expected to have a 100% reliability, working 24/7
- The downtime of a system should be 0
- In case of failure the app should restart within 5-10 seconds.
- As long as the new environment fulfill the given minimum specification, the system should work normally

8. System Modifications

- The UI or payment security are the most likely to be modified
- Better UI design and better payment security

9. Physical Environment

- The application is expected to be hosted at Google Play servers, so there will not be any extra equipment

10. Security Issues

- System administrator should have access to any data so that he/she can control and modify any unacceptable information
- The system is expected to be backed up once a week
- Back up will be done automatically under the control of system administrator
- Physical security isn't an issue as there is almost no private information used in the system

11. Resources and Management Issues

- The application will be designed through the Android Studio Application by 4 members of our team. Application is supposed to be done in about 1,5 months of developing. There are no financial resources needed.
- Developers need to know the Object-Oriented Programming in Java and developing in Android Studio.
- The deadline is projected to be at the end of November
- There is no budget for the application, all required hardware already is available and developers will not earn anything
- All 4 developers are responsible for system installation and system maintenance

8. Acknowledgement

This document was done by our team in this partition:

Rakhman Asmatullayev: Section 2, Section 3.C, Section 7.

Hongxiao Yao: Section 3.A and 3.D, Section 4.B.

Hyunseung Lim: Section 4.A, 4.C and Section 5.

Umar Taufiqulhakim: Section 3.B and Section 4.D.

Section 6 was done by all of our team members.