CS309 OOAD Project Proposal

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I. Abstract

As the CS309 OOAD class's final project, our team choose the topic *SUSTech Store*. The main purpose of our project is to build an online trading platform, named *DEAL!*, which could help all SUSTech members to sell and buy goods.

As the basic function, our website has the ability to:

- Allow users to publish their selling and buying information,including price, categories, labels, etc.
- Allow users to sell and buy goods according to selling and buying information published.
- Help user to communicate through our integrating chatting system while trading.
- Deliver user their transaction information with our integrating notification, e.g., email, QQ, etc.
- Support users to choose their payment options, such as using virtual currency and integrating third-party payment platform.

As the advance function, our website has the ability to:

- Allow users to show their campus life with our integrating campus life property.
- Allow users to authorize their identification in order to prevent masquerading.
- Help user to distinguish a good buyer/seller with the information provided by our credit system which also has standardization management.
- Support purchasing agent service, e.g., bringing lunch or documents.

As an important and special feature, the complete trading process are divided into two parts. The first part, publishing searching and trading, will be completed online. While the second part, delivery of goods, will be completely offline, even without the help of a cellphone! Also our well designed trading logic can ensure the transaction will be absolutely safe.

Further more, we will also provide a front-end backstage management system, which can help administrators of this websites to control users, goods and also transactions.

II. Team and cooperation

Our team is made up of 5 people. Our name and student numbers are already shown below our proposal title.

Three of our team, Lan chenxi, Wang zhihao and Wang chenyu, will participate in the designing and implementing the front-end web pages. The front-end team will be leading by Lan, who is a great designer and familiar with most of the front-end techniques.

The remaining two, Jin zhaoxuan and Sun yongkang, will bend themselves in back-end building. Jin will perform as both the back-end leader and the project captain. Jin can contribute his excellent experience of building web services learned from his internship during last summer.

III. Description

A. User Login Account Management

The *User Account Registration and Login Services* are designed to be convenient and safe enough to use. Our websites will enable user to create their own account with either phone number or student number. Users could improve their personal information, which includes password setting, headshots upload, alipay binding etc. Further more, users could delete their own account if they don not want to use it anymore.

There are some more interesting features :

- *No registration* : When a user logs in for the first time, he can only choose to login with phone number and verification code. The system will detect that the user is a new user and automatically register an account for the user.
- *Fill in user information before trading* : Only after user fills in his student card number can the user access the main functions of SUSTech Store. Also, if the user wants to login with card number and password, he is also supposed to set a password.
- *Verify before sensitive operations* : When a user tries to do some sensitive operations like changing password or cancelling account, the system will

verify the identity of the user by sending verification code to the user's cell phone and ask the user to input the verification code.

Complete user login logic could be seen in "Fig. 1. User Login Services UML".

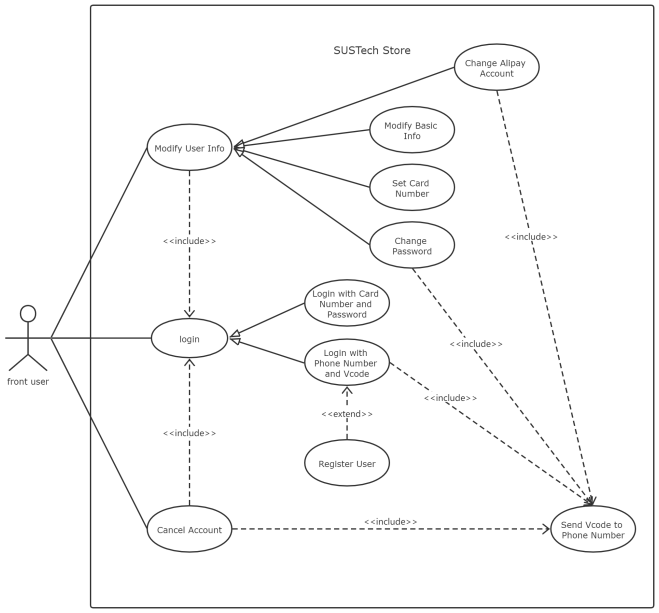

Fig. 1. User Login Services UML

B. Order Creation

The second important part of our websites is the *Order Creation Services*. This service could provide buyer an enjoyable chatting environment and a fast searching engine. It also can offer seller a convenient and equitable platform to show their goods.

There are some more interesting features :

- *Chat before creating orders* : The buyer and seller can have an online chat before the buyer create order to discuss about the price and trade details such as time and location.
- *Modify the price for discount* : After the order was sent to the seller, seller can choose to modify the price so that the buyer can pay for the good in a previously discussed price.
- *Cancel/Refuse if in need* : When necessary, Both buyer and seller can cancel/refuse the order without reason before the order takes effect.
- *Cancel order automatically* : The seller may trade with multiple buyers at the same time. When the seller confirms one of the orders, all the other orders will be cancelled automatically.

Complete order creation logic could be seen in "Fig. 2. Order Creation Services UML".

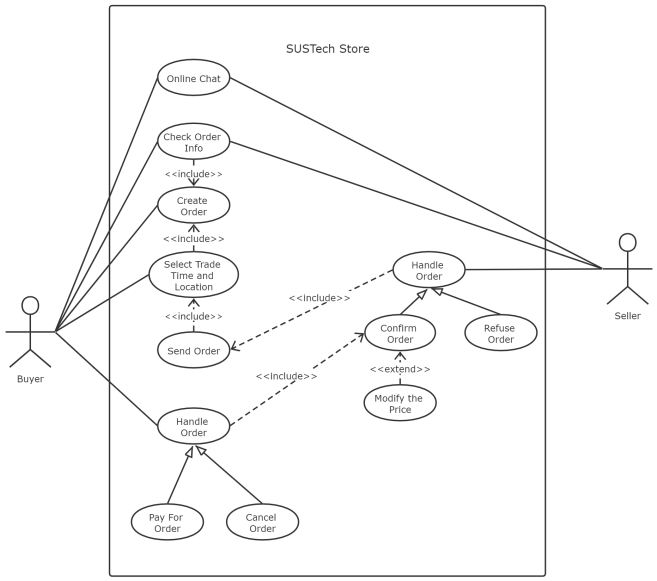

Fig. 2. Order Creation Services UML

C. Offline Transaction

As early mentioned, our *Transaction Services* will be completely offline. The whole transaction is based on three different codes: *transaction code*, *deal code* and *refund code*.The details of how they works will be explained later. Our website will perform as a third-party organization to ensure the safety of both the money of a buyer and the goods of a seller during the transaction.

Here is some features of *Transaction Services*:

- *Verify before transaction* : After the buyer pays for the order, the buyer and the seller will both get the transaction code. Before the offline transaction begins, the seller are supposed to verify the identity of the buyer by checking the transaction code.
- *Two private codes* : Except from the transaction code, the buyer will get a deal code and the seller will get a refund code. They are supposed to negotiate offline and one of them should get the private code of the other. Whoever enter the other's code in SUSTech Store afterwards will get the money.
- *Totally offline* : Due to the design above, the transaction can be done without any access to the SUSTech Store. This is mainly out of the consideration that SUSTech Store is a website instead of a mobile app or a mini app, so it may be inconvenient to access it on cell phone.

Complete offline transaction logic could be seen in ”Fig. 3. Offline Transaction Services UML”.

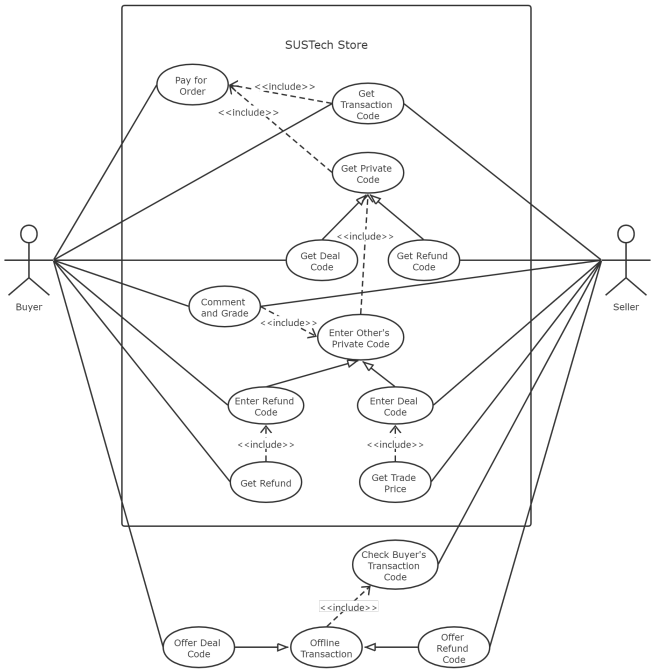

Fig. 3. Offline Transaction Services UML

D. Other Features

- Background management system
- Help offering system with a lighter transaction process
- Credit score
- ...

IV. Techniques

A. Frontend

- Use Vue + Element UI as basic framework
- Use some APIs of Baidu Map for locating

B. Backend

- Use Java 1.8 + Spring boot as basic framework
- Use some Tencent Cloud APIs for some features like sending SMS
- Use some Alipay APIs for payment (maybe) • Use Knife4j for API debugging
- Use Shiro + JWT for authentication
- Use Elasticsearch to optimize search speed (maybe)

C. Others

- Use Nginx to solve CORS

V. Timeline

- This week is Week 5 and we have finished most of the design of the basic requirements as well as some backend APIs like account management
- Before Week 10: Implement all the basic requirements and Help Offering System
- Before Week 11: Finish debugging of all the basic requirements
- Before Week 14: Try to implement a background management system
- The remaining time: Debugging Adding cooooooool features