

Coupay System Design Document Series

Test analysis report

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1 Introduction

1.1 Written to

Write this test report aimed at finding and pointing out errors, gaps and weaknesses in the system, by way of documentation, and to record the problem in the program, and analyzed to provide developers with correct and complete infrastructure.

1.2 Background

This system named coupay , Is a third-party payment system, developed from South China University of technology Day Sheng-Chang team.

1.3 Define

- Android: Android is based on Linux Free and open source operating system, mainly used in mobile devices, such as smart phones and tablet computers, the Google and the Open Handset Alliance and leads the development of the company.
- NFC: NFC Is Near Field Communication Abbreviations, short-range wireless communications technology. Jointly developed by Philips and Sony, NFC is a kind of contactless identification and interconnection technologies for mobile devices, consumer electronics, PC and smart control tool for short-range wireless communication.
- Mobile: mobile terminals or mobile communication terminal refers to the computer can be used in mobile devices, broadly speaking, including mobile phones, laptop, Tablet PC, POS Even the onboard computer. But this article mainly refers to mobile phones.
- System accounts: accounts belonging to system users, there is a certain capital.
- Consumer experience: users on the consumption of a specific evaluation, including evaluation of text, business ratings, pictures and so on
- Dropdown refresh: a way of updating data, updated with the latest news.
- Up and more: a way of updating data, updating information earlier than the current information.
- AES: advanced encryption standard cryptography (Advanced Encryption Standard, AES), also known as the Rijndael advanced encryption standard encryption method, is a block cipher standard use by the United States Federal Government.
- MD5: Message Digest Algorithm MD5 is widely used in the field of computer security is a hash function to provide message integrity protection.

1.4 Reference materials

- a. Outline design specification

- b. Software requirements specification

2 Test Summaries

- User version

Identifier	Need to test the functionality.
Login	Log in, if the login input corresponds to the data in the database, then log in success. Instead, the server returns the appropriate error.
Register	To register, after entering the user name, the server automatically detects if the user name already exists, insert database information after successful registration.
SinglePay	One-person payment, show notification after paying successfully.
MultiplePay	More-than-one-person payment, select a payer and makes a request to the server, then the server to push messages to other paying clients and their payments will be fed back to the sponsor.
ShareExperience	After the completion of payment, consumer can upload the comment.
getExperience	Get the comments that friends have uploaded.
getSurround	Get the surrounding business according to geographical location of user.
Relation	Querying, retrieving, concerning, removal of concerned about friends and business.
Bankcard	Querying, binding, unbinding bank cards.
Coupon	Querying, using, sending coupons.
Bill	For billing inquiries.
Grade	Query points, redeem coupons.
Balance	Query system balance, recharge and withdrawal.
Setting	Set monthly spending limit, automatically alert users.

- Business Edition

Identifier	Need to test the functionality.
Login	Log in, if the login input corresponds to the data in the database, then log in success. Instead, the server returns the appropriate error.
Register	To register, enter registration information needed. Accounts can only be used after admin authentication.
Receipt	Results to generate QR codes for consumers, accepting consumer payment success information and display.
VIP	Queries, add, delete, modify a business member, and adjustment of preferential rules.
Bankcard	Query, binding, unbinding bank cards.
Bill	Query trading records associated with business.
Coupon	Querying, editing, publishing, send coupons.

Advertising	Publishing, managing advertising.
Setting	Set of business related information.

- **Administrator version**

Identifier	Need to test the functionality.
Login	Log in, if the login input corresponds to the data in the database, then log in success. Instead, the server returns the appropriate error.
UserManagement	Queries, ban users.
TradeSupervision	Query, mark, unmark it, freeze, and thaw the transaction, refreshed in real time transactions.
Identification	Acceptance, rejection merchant registration request.
Society	Queries, removing, screening consumer experience or advertising.

3 Test results and found

3.1 User version

3.1.1 Test 1 （ Login ）

Database server existing account:lgb Password: 12345

- Enter your account number: xxx The password: 12345. The system prompts the user does not exist.
- Enter your account number: lgb The password: 1234. You are prompted to password error.
- Enter your account number: lgb Password: 12345. Enter the main interface of the system, online server chain table inserts the name, insert the server database logon information.
- Forced to stop the program, login again, and enter your account number lgb Password: 12345. You are prompted to repeat the logon.

3.1.2 Test 2 （ Register ）

- Enter the registration screen, enter your account number: lgb and when the focus leaves the input box, enter click to display the user name existence sign, then even though complete the remaining information still cannot submit your registration request.
- Enter the registration screen, enter your account number: fanzy and when the focus leaves the input box, the right side of the box shows the user name available flags, after you fill in the remaining information and click on the register button, you are prompted to register successfully, the server database is inserted a new user data.

3.1.3 Test 3 (SinglePay)

- Selected QR payment: mobile scanning business system-generated QR code, enter to confirm payment page, amount and business information is displayed correctly, choose the one-person payment, enter the security verification interface, enter your payment password, then get the notification that the payment is successful, new trade record is inserted into the server database.
- Select NFC Pay: Enter the amount on the Tablet PC B, make the phone A's NFC Chip close to Tablet PC B's and the phone A receive a successful payment notification, new trade record is inserted into the server database.

3.1.4 Test 4 (MultiplePay)

- Mobile phone A Scan the QR code, read the consumer 200, Then select more – than-one-person payment, add payer B. At this time B Using mobile phones B Log on to the system and receive the Notice of the application from A for more-than-one-person payment (including sponsors, the amount, the number of participants, the payee, in this case, the amount is 100), Click on the notification into secure authentication interface, after confirmation, mobile phone A received the notice that rest payment had been finished, then enter the security verification interface, complete the transaction confirmation, new trade record is inserted into the server database.
- Mobile phone A Choose to pay, adds a payer B. At this time B using mobile phones B Log on to the system, and receive the Notice of the application from A for more-than-one person payment (including sponsor, amount, number of participants, the payee), mobile phone B Without any action, a minute later, mobile phone A gets the Failure message about more-than-one-person payment.

3.1.5 Test 5 (ShareExperience)

After consumption is completed, enter the sharing interface, enter a comment, select rating, click on the photos button, took this photo which was displayed on the sharing interface, click the share button, and correct information is inserted into server database.

3.1.6 Test 6 (getExperience)

- Enter community interface, no experience record at this time, click the Refresh button, displays a number of consumer experience record shared by user's friends.
- Quit the program, once again entered the community interface, and appears out of the shopping experience of records to display the last exit.
- Drop down to refresh, the latest 10 Consumer experience records added in first on the basis of the original consumer experience records.

- Up and more, the latest 10 Consumer experience records added at the end on the basis of the original consumer experience records.

3.1.7 Test 7 (getSurround)

I'm in the hostel, enter gets surroundings interface, click on the refresh button, and get basic information about businesses around successfully.

3.1.8 Test 8 (Relation)

Enter the social management interface, show the friend list, click on the find button, enter the search interface, enter the keyword "h" to get search results "hello","hey" (Only this two names begin with "h"), click Add, successfully concerned friends.

3.1.9 Test 9 (Bankcard)

Successfully query, bind, and unbind a bank card.

3.1.10 Test 10 (Coupon)

- Enter the coupon admin interface, successfully shows users all basic coupon information.
- Enter the payment confirmation interface, click the use coupon button, got the available consumption coupons.
- Enter the coupon management page, select a coupon to perform send operations, the system displays your friend list, choose a friend, prompted presented successfully, the related data in server database changes.
- To social management interface, choose a friend perform a send coupons operation, the system displays a list of coupons, choose several coupons and their quantity and confirmation, you are prompted to give successful, the related data in server database changes.
- Access interface, select a comment, do the send coupons operation, the system displays a list of coupons, choose several coupons and their quantity and confirmation, you are prompted to give successful, the related data in server database changes.

3.1.11 Test 11 (Bill)

Inquire the billing successfully, categorized by time.

3.1.12 Test 12 (Grade)

Enter the redeem interface, displaying a list of coupons available for exchange, after selecting a coupon, you can select the quantity of it to exchange, determine the exchange prompted and the related data in server database changes.

3.1.13 Test 13 (Balance)

Successful implementation of system balance enquiries, achieving recharging and withdrawing operation.

3.1.14 Test 14 (Setting)

Set spending limits 200, when consuming up to 180, system prompt about to reach the spending limit.

3.2 Business version

3.2.1 Test 1 (Login)

Database server existing account: hello Password: 12345

- Enter your account number: xxx password: 12345. The system prompts the user does not exist.
- Enter your account number: hello password: 1234. You are prompted to password error.
- Enter your account number: hello Password: 12345. Enter the main interface of the system, online server chain table inserts the name, insert the server database logon information.
- Forced to stop the program, login again, enter your account number hello Password: 12345. You are prompted to repeat the logon.

3.2.2 Test 2 (Register)

Enter the registration screen and fill in the necessary information and click ' submit ' to display submitted successfully, correct information is inserted into server database. After the administrator examines and verifies the request, the business user was informed by email.

3.2.3 Test 3 （ Receipt ）

Enter the Bill amount, generated QR codes and displays, after consumer scan it and pay successfully, the system displayed the notification of successful receipt.

3.2.4 Test 4 （ VIP ）

Successful query, add, delete, modify a business member, enter discount rule set interfaces, change the preferential rules for each level member, businesses database modified accordingly.

3.2.5 Test 5 （ Bankcard ）

Successfully query, bind, and unbind the bank card.

3.2.6 Test 6 （ Bill ）

Inquire the billing successfully, categorized by time.

3.2.7 Test 7 （ Coupon ）

Successfully query, edit, publish, and gift vouchers.

3.2.8 Test 8 （ Advertising ）

Enter the ad management interface, click on ads, enter the ad's necessary properties and click on publish, the related data in server database changes.

Advertising management interface to modify the published advertisement, the related data in server database changes.

3.3 The administrator version

3.3.1 Test 1 （ Login ）

Database server existing account: hao123 Password: 12345

- Enter your account number: xxx Password: 12345. The system prompts the user does not exist.

- Enter your account number: hao123 Password: 1234. You are prompted to password error.
- Enter your account number: hao123 Password: 12345. Enter the main interface of the system, online server chain table inserts the name, insert the server database logon information.
- Forced to stop the program, login again, enter your account number hao123 Password: 12345. You are prompted to repeat the logon.

3.3.2 Test 2 (UserManagement)

- Enter the user management page, click the ban button near the user "lgb", then when the user system logon account: lgb password: 12345 , User system prompts the user “lgb” has been banned.
- Enter the user management page, retrieve the user name "lg" Show users "lgb”, and get more information by clicking on the user.

3.3.3 Test 3 (TradeSupervision)

- Real-time refresh option is selected. After user version and businesses version complete transactions, transaction list appears immediately in the new record.
- Query mark, unmark it, freeze, and thaw the transaction successfully.

3.3.4 Test 4 (Identification)

After submit the registration request successfully, log on the administrator version, enter the authentication interface, show just the business registration requests, click the ‘pass’ button, then the Business version user receive the pass notification through the mail, while the record in authentication interface of administrator version is cleared.

3.3.5 Test 5 (Society)

Query, delete, and block shopping experience or advertising.

4 Conclusion to the software

4.1 Functionality

The system passed the test of the functions including login, registration, one-person payment, more-than-one-person payment, recharging and withdrawing, card management, system’s grade

redemption, coupon management, billing inquiries, social management, personal settings, sharing experiences and gaining share, gets surrounding.

4.2 Limited

- Secure data transmissions to be optimized.
- Payment security mechanisms to be optimized.
- Distance calculation accuracy is not high, needs to be optimized.
- Only implements the basic functionality, the follow-up needed to be added.

5 Analysis Summaries

5.1

According to the test, the system can meet the confidentiality, security:

- Confidentiality

During the registration process, the user ID, password and personal information transmission and preservation are required to take appropriate measures to safeguard its security; in the course of trade, for both buyers and sellers of sensitive information, especially for buyers' bank account number, system use high-level encryption to protect them.

- Security

For data security, secure backups of databases, encrypting protection for critical data and monitor data transfer by various operations such as read, write, delete, modify. For transferring data, use AES Encryption commonly, and use MD5 Encryption for some critical data, such as payment password;

For network security, set up a network firewall; the client side, use the login CAPTCHA, detect ip and send validation exception messages; cash transaction authentication uses a pair of passwords, digital certificates: one is the logon password, another is the pay code, Lack of any password, Cannot make funds flow.

5.2 Defects and limitations

- The entire system's security systems are not foolproof. It still needs to be strengthened.
- Capacity and concurrency in software and hardware of the system still need to be strengthened.
- User interface and experience needs to be improved.

5.3 Recommended

- Security mechanisms can be improved by referring to the latest network security mechanisms.
- System performance can be replaced by more powerful server, replace the server system and optimize parallel processing algorithms to improve.

5.4 Evaluation

Functional requirements in software development largely complete, non-functional requirements need to be improved.

6 Test Resource Consumption

The test stage is parallel with code stage, cost two months totally.