

Bank Management System Based on QT

Hongting Li

School of Information Engineering
Xijing University
Xi'an Shaanxi, 710123, China
e-mail: lihongtingmail@163.com

Jiajun Qin

School of Control Engineering
Xijing University
Xi'an Shaanxi, 710123, China
e-mail: qinjiajun2021@163.com

Liping Wang*

Internet of Things and Big Data Technology Research
Center, Xijing University
Xi'an Shaanxi, 710123, China
e-mail: wangliping@xijing.edu.cn
*corresponding author

Baonan Yang

School of Science
Xijing University
Xi'an Shaanxi, 710123, China
e-mail: yangbaonan@foxmail.com

Abstract—With the advent of the information age, the function and value of information begin to be fully understood and used by people. As a comprehensive sector of the national economy, banks need to use advanced management system to improve their service ability and service efficiency if they want to maintain their competitiveness and expand their profitability in the fiercely competitive society. This design system uses cross-platform Qt Creator as the system development tool, builds the interface of banking system on Qt Creator, adopts C/S architecture, uses Mysql database to store the managed information and the data are added, deleted, modified and checked. The system is mainly composed of teller interface and client interface. The Banking business mainly includes the functions of opening an account, depositing, withdrawing, transferring, inquiring the balance, etc., which realizes the basic business management of the bank and can accurately and timely display the required information to customers.

Keywords—Qt Creator, Mysql, Bank Management System

I. BACKGROUND

As the times advanced and people's wealth and income increased, more and more people chose to save their wealth, so the banking industry was born [1]. In order to cope with the powerful competitive market, banks need to put forward higher requirements on their electronic level and management level [2]. How to use electronic technology to build an efficient and unified system to deal with various businesses is very critical. On the basis of database, the system realizes the on-line analysis and processing of a large number of data through software engineering. At present, banks need to deal with a lot of problems every day, and the management mode [3] has also changed a lot. Therefore, in order to realize the convenience of people to handle banking business, the banking management system was born.

The bank's management system is constantly enriched and updated in the efforts of developers. Many developers try to use different languages (JAVA, C++, C language, etc.) in different development platforms (Linux, JRAF, Qt Creator, etc.) to explore a more perfect bank management system.

II. PLATFORM INTRODUCTION

Qt Creator is a cross-platform C++ graphical user interface application framework [4]. Its features include: First, QT has excellent cross-platform features, the same code can be compiled and run on any supported platform, and there is no need to modify the source generation. QT is object-oriented as C++ language; it has a good encapsulation mechanism and a very high degree of modularity and good reusability. Second, QT also has a rich API. It contains at least 250 C++ classes, collections, files, I/O devices, date/time classes, and even regular expression processing. Last, QT supports 2D/3D graphics rendering and OpenGL, as well as extensive document development and XML support. It is because of these characteristics that this system design will be implemented on QT platform.

Signal and slot [5] is the communication interface between objects, which is the core feature of QT. The signal is equivalent to a text message, and the slot function is equivalent to the phone receiving the text message. It should be noted that signals must have the signals keyword declaration; the signal has no return value, but can have parameters; A signal is a declaration of a function, just a declaration, not a definition. When the signal is used, the method is emitting my Signal.

A signal is emitted when an object's internal state changes, and the slot connected to the signal is executed, similar to calling a common function. In this case, the signal/slot mechanism is completely independent in any GUI event loop. Once all slots have returned, the code that follows the emit statement is executed [6].

III. THE OVERALL DESIGN OF THE SYSTEM

In real banks, operations are carried out by tellers. In order to distinguish their identities, bank staff need to register as tellers and get their own unique job number. Through the background database, they can view the performance corresponding to their job number, which is also a way for banks to carry out work assessment. The operation personnel of this system is bank teller, teller carries on the registration first, puts the relevant identity information into the database, logs in next, also can exit of course. The teller logs into the main interface to serve

customers. The main interface has ten functions and operates according to customers' requirements. Figure 1 is the functional block diagram of the specific system design.

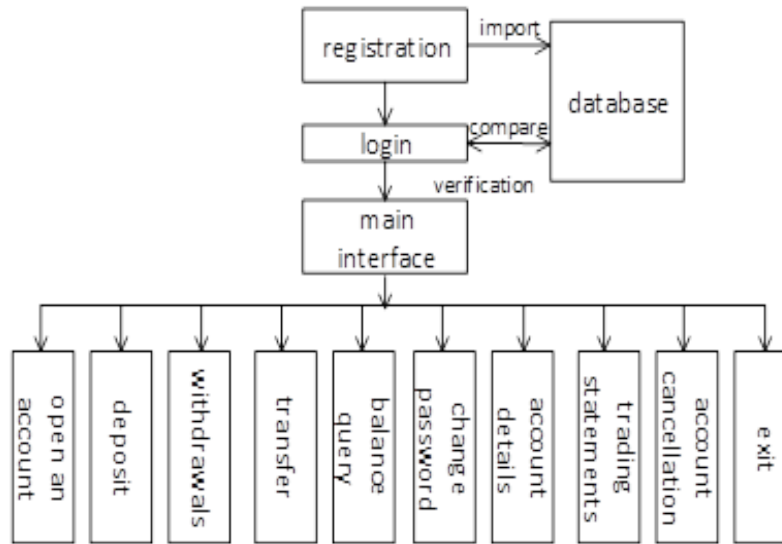


Figure 1. Block diagram of bank management system design function

IV. SYSTEM MODULE DESIGN AND IMPLEMENTATION

A. Information Interaction Module

a) Teller module. As shown in Figure 2, the teller function module mainly includes: registration, login, and exit. Information about the teller shall be filled in during registration, and the background shall store the information in the database. When the teller logs in, the background shall

compare the information with the information stored in the database during registration. After comparison, you can enter the login interface, which is the main interface. Of course, the teller can also exit the teller function module. At this point, the connection to the server and database are disconnected [7].

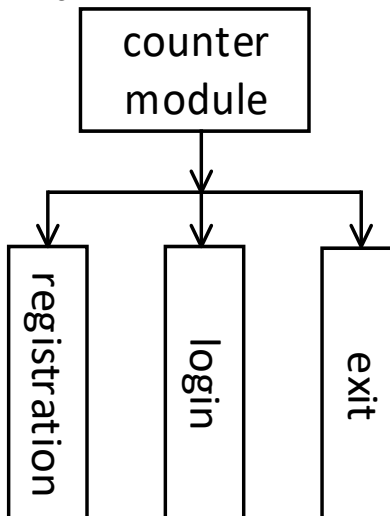


Figure 2. Teller module

Registration: The teller enters his/her identity and relevant information, and checks whether it is valid or not. Send the correct information to the server, and the server generates a 6-digit number after receiving it to return to the client, and stores the identity information in the MySQL database for archiving. The generated job number is part of the information filled in by the teller when logging in. The specific process is shown in Figure 3.

Login: With the 6-digit account number and password after successful registration, the teller requests the server to log in. After receiving the request, the server verifies the legitimacy and correctness of the account and password. If it is correct, the teller is allowed to log in. Otherwise, the login request is rejected and the information needs to be filled in again. The specific process is shown in Figure 4.

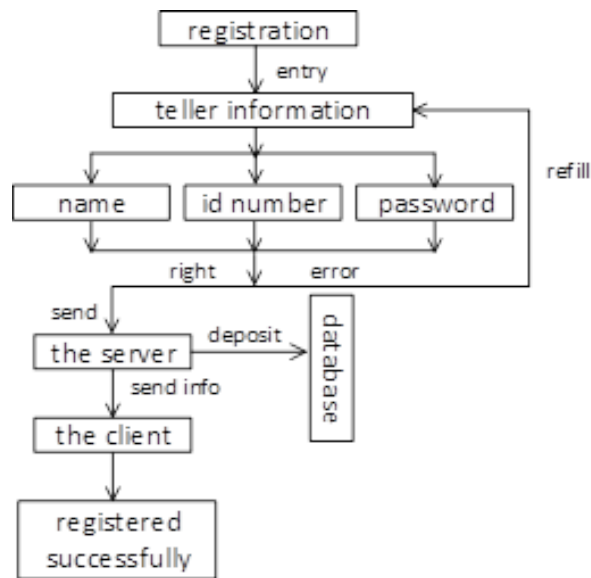


Figure 3. Registration flowchart

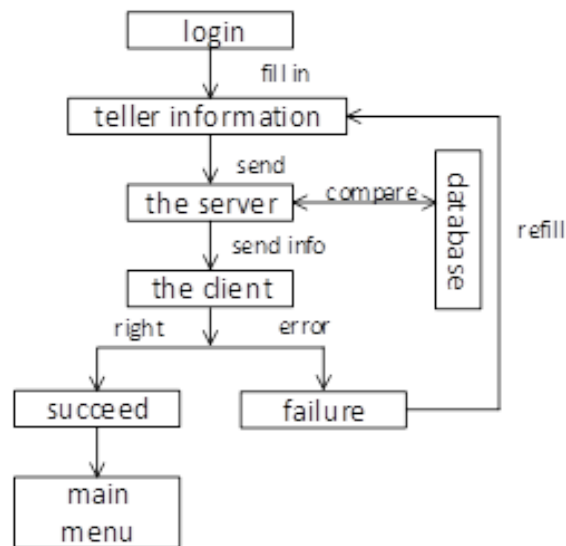


Figure 4. Login flow chart

Customer module. As shown in Figure 5, customer function modules mainly include: account opening, deposit, withdrawal, transfer, balance inquiry, password modification, account details, transaction report, account cancellation and exit. To open an account, deposit, withdraw money and transfer money, you need to fill in the required information, which will be stored in the database and recorded in time. Balance inquiry, account details, transaction reports are generated by the background, just click and then the interface will be displayed. To cancel an account, you need to enter the account information. To exit the function, click directly to exit the main interface and return to the teller function module.

Select the withdrawal function from the 10 functions of the customer module for detailed explanation: To enter the

withdrawal module, the teller needs to input the customer's account number, ID number, password and withdrawal amount. After the information is sent to the server by the client, it is compared with the customer information in the database. If the information is correct, the corresponding customer information in the database is modified and saved. The server then feeds the information back to the client and the teller can view the customer information after the withdrawal. If the information is wrong, the server will feed it back to the client. The teller can know that the customer information entered is wrong and needs to re-enter the correct information before the relevant operation can be carried out. The development of wireless communication has promoted the efficiency of data transmission[8-15].

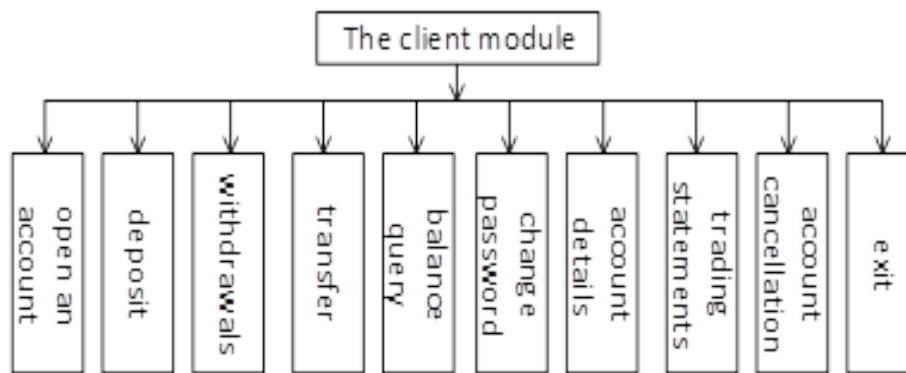


Figure 5. Customer module

B. Communication Module

Server communication process:

- (1) Create a socket.
- (2) Set the socket to the listening mode.

(3) Wait and accept the client request. The void newConnection() signal provided by QTcpServer can be used to detect whether there is a connection request. If there is, the Socket information to the client can be obtained by calling the nextPendingConnection function in the corresponding slot function (the return value is the pointer of QTcpSocket* type), and the communication between the client and this Socket can be carried out.

(4) Receive or send data to the client. Use the read () or readAll () functions when receiving data and the write () function when sending data.

Client communication process:

- (1) Create a socket.
- (2) To connect to the server, the QTcpSocket class connectToHost () function can be used to connect to the server. If you successfully establish a connection with the other party, it will automatically trigger the connected signal.
- (3) Send or receive data to the server. Read: When the other party sends the data, the linked socket (communication socket) triggers the readyRead signal to receive the data in the corresponding slot function. Write: Send data, the other party's (server's) socket (communication socket) will trigger the readyRead signal to receive data in the corresponding slot function, and a disconnected signal will automatically be triggered if the other party disconnects actively.

C. Database Module

The bank used to have a special place to store customer information in reality, and these data are classified and placed in a certain order, which is convenient for bank staff to find and use. With the progress of technology and the update of information management mode, banks now have their own database. This kind of information management not only saves time and effort, but also has low cost.

According to the above system design requirements, two tables were established in the database, one for storing the teller information and the other for storing the customer information. Tables are built-in code because the information of the program is input, that is, variable, it is

impossible to create a table in advance. Therefore, when the information is input, it is stored in the database in real-time, and the background only monitors these tables.

The teller information mainly includes: Num-teller number, name-teller name, Identify - teller ID number, password- teller password.

V.CONCLUSIONS

This paper mainly introduces the design process of bank management system from scratch. Through QT good cross-platform characteristics, using C++ programming, using C/ S architecture to achieve communication. Mysql ensures the security of information data. Through human-computer interaction, it greatly improves the efficiency of work. The use of database for data processing can reduce the error of manual data processing and time consumption to a certain extent. The bank also saves the labor input, reduces the cost expenditure, and improves the profitability of the bank.

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