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**Title： ATM System Requirement**

**College： Maths、Physics and Information Engineering**

**Major： Software Engineering 151**

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### 1. Purpose

###### 1.1 For the bank

The traditional counter service of bank exposes some problems with the improvement of social life. The biggest problem is low efficiency, because the space and employees are limited. Besides, there are some inconvenient processes, including taking number paper and signature. Therefore, an ATM system greatly saved the time for customers and employees. It improves the word efficiency for the bank also is very convenient for customers.

###### 1.2 For the students

For us, a design of ATM system is really a challenge. How to apply the knowledge learnt in the class and notebooks to the practice, that help us to improve our ability, including cooperation 、analysis and coding ability. Besides, the ATM system consists of so many functionalities and actors, how they interact with each other, which has to be familiar with object oriented. Analyze the whole system by dividing several classes will make the system modular and have clear logic. After the practice, we can make a progress in the study and have a deep understanding to this course.

### 2. Background

###### 2.1 Basic concepts

ATM System is close to our life. It provides many businesses, including withdrawing、depositing、transferring and querying. These businesses occur at any time in our daily life. The person who has applied a bank account is called depositor. One depositor can apply for several accounts in the bank. The depositor can deposit money into an account, or withdraw it from his account, or transfer the money from one account to another, and query their balance and transaction records at any time. In addition, depositors can also change their password. Every time when the amount of money or password changes, the database of the bank which store the depositors and accounts information will also change.

###### 2.2 Dynamic data

1. In the withdrawal and deposit process, the system only support transaction amount is the multiple of 100 yuan.
2. The account is consist of 19 digits and the password is consist of 6 digits.
3. The withdrawal at one time can not be more than 2500 yuan, the daily limit is 20000 yuan.
4. The type of balance and amount of transferred money is "float", which are rounded up to two decimal digits.

### 3. User Role

There are 4 roles in the ATM system.

(1) **User**. The user who has an account can withdraw、deposit、transfer and query.

(2) **Administrator**. The administrator mainly processes some fortuitous event for the ATM system. For example: When the user enters wrong password over 3 times. The system will forbid the user to continue to transact. And the user should contact the administrator if he wants to login the system and do some transaction.When the balance of the ATM is less than 1000 yuan, the system feedbacks to the administrator automatically.

(3) **Mechanic**. The mechanic is to repair the ATM system when it is out of control and maintain the system regularly.

(4) **The bank computer**. The ATM system shares the same database with the bank computers. They will update the account information synchronously if users do transaction on one of the two ways.

### 4. Function Description

###### 4.1 Function division

The function can be concluded to 5 parts : user validation、withdraw、deposit、transfer and query balance. Just shown as the Figure 1.

ATM System

User Validation

Withdraw

Deposit

Transfer

Query balance

Figure 1 : the function division for the ATM system

###### 4.2 Function description

In the ATM system, every user can create an account, and send them the bank card which contains the card number and username. The account stores the users’ personal information, transaction information and balance. Every user who have the bank card can deposit、withdrawal and check the balance through ATM machine.

When we use the ATM machine, we need to insert the bank card, and enter the password under the prompt of the system interface. It is judged by the system whether the account is valid or not. If the password is not correct, then it will let the user to enter the password again. If the password is incorrect for three times, the system will automatically exit the service. If the password is correct, the system will enter the interface of selecting service type: deposit money、withdrawal money、check the balance.

1. **Withdrawal money**: after the system confirm withdrawal request, it will ask the amount. The system interface show the enter amount request.

The user needs to enter the money amount which should be compared with max(2500,account balance).If the amount entered by the user is larger than max(2500,account balance),the system will display the wrong information, and turn back to original interface.

After user enters the correct amount, the system will send the confirm request. User click confirm, the system will send the request to currency counting machine, then the currency counting machine will out of the money. After user take the money, the system will automatic update balance. When user choose finish service, the system will exit out the bank card.

1. **Deposit money**: After the system confirms the request, system enter into the deposit interface, the user will deposit into the machine, the system prompts the currency-counting machine for counting, then the system records and update the balance. The system shows deposit is completed, the user clicks exit, then the system will withdraw bank card.
2. **Check the balance**: Users choose to query the balance service, the system confirms the request, according to the user information to find the balance, and displayed on the interface.
3. **Transfer money**: When the transaction type selected by the user is the transfer, after confirmation of user identity, system prompts the user to enter the transfer amount. The amount will be compared with the account balance, if the amount entered by the user is larger than account balance, the system will display the wrong information, and turn back to operate interface. After the user enter the correct amount, the system will send the request to the bank computer, the database will update the balance and save the information.

### 5. Performance requirements

(1) **Usability**. The system design should have a good usability and easy to operate. Besides, it should satisfy the common user usages under the normal Windows operating systems.

(2) **Robustness**. The system should give the responding prompt when the users have wrong enters.

(3) **Safety**. The system should protect the users’ personal information, which shouldn’t be easy to be accessed by others. Even if the system is out of control, it still needs to ensure the safety of the data relevant to the user. Besides, it should attach some alarm. For example, when the user enters the wrong password over 3 times, it will trigger the alarm. In the reality, that bank card will be locked unless you ask help to the managers or the staff in the bank.

(4) **Response time**. If the system doesn’t receive any response over 20s, it will show that “Error, request timeout” and return to the main interface.

### 6. Flow Chart

Start

Insert Card

No

Input Password

Wrong passw over 3 times?

No

Correct Password?

Yes

Yes

Choose Operation

Change psw

Deposit

Query

Exit

Transfer

Withdraw

Input 6 numbers

Put money

Input account and number of money

Show Balance

Select amount of money

No

No

No

Money>=100,

Money%100==0

Correct account and enough money

No

Sufficient money?

digit=6

Yes

Yes

Yes

Yes

Change successfully

Deposit successfully

Withdraw successfully

Transfer successfully

Continue to transaction?

Yes

No

Print a receipt?

Yes

Print the receipt

No

Exit