“class\_ATM.h”

#pragma once

#include<iostream>

#include<string>

#include<vector>

#include"class\_staff.h"

#include"functions.h"

using namespace std;

class ATM

{

friend class user;

friend class staff;

public:

ATM(): money(1000000)//Default constructor

{

ifstream fin("atm.txt", ios::in);

fin >> id;

fin.close();

ofstream fout("staff.txt", ios::out);

fout << id;

fout.close();

}

ATM(const ATM & atm) { money = atm.money; id = atm.id; } //Copy constructor

// ~ATM() { cout << "ATM's destructor called!" << endl; } //Destructor function

string login();

void display();

void operate(const string& number);//deposit, withdrawal, check balance, quit

int logout();

private:

double money;

string id;

//int fault;

};

“class\_ATM.cpp”

#include "class\_ATM.h"

#include<cstdlib>

#include<ctime>

string ATM::login()

{

try

{

return enterNumberPassword();

}

catch (int)

{

srand((int)time(NULL));

int randIndex = rand() % 10;

staffs[randIndex].passwordChange(); //If it is abnormal, execute passwordchange ()

return enterNumberPassword();

}

}

void ATM::display()

{

cout << endl;

cout << "----------Welcome to use automated teller machine----------" << endl;

cout << "-- Please choose a operation as follow: --" << endl;

cout << "-- 1. deposit --" << endl;

cout << "-- 2. withdraw --" << endl;

cout << "-- 3. check balance --" << endl;

cout << "-- 4. quit --" << endl;

cout << "-----------------------------------------------------------" << endl << endl;

}

void ATM::operate(const string& number)

{

while (1)

{

int x;

cin >> x;

double sum = checkMoney(number);

if (x == 1) //deposit

{

cout << endl;

cout << "Please put your money to the machine and click the confirm button(in this system we just input the amount of your money)" << endl;

int inmoney;

cin >> inmoney;

money += inmoney; // update ATM balance

updateMoney(number, sum + inmoney); //Deposit money into user's balance

}

else if (x == 2) //withdraw

{

cout << endl;

cout << "Please enter the amount of the money which you need." << endl;

int outmoney;

cin >> outmoney;

if (money < outmoney)

{

cout << "Sorry, the amount in the ATM is not enough!" << endl;

throw money;

break;

}

money -= outmoney;

updateMoney(number, sum - outmoney); //Update balance after withdrawing money

}

else if (x == 3)

{

cout << endl;

cout << "The balance of your account is " << sum << endl << endl;

}

else if (x == 4)

{

cout << endl;

break;

}

else

{

cout << endl;

cout << "Please enter an available number!" << endl << endl;

}

}

return;

}

int ATM::logout()

{

cout << "The bank card has been ejected. Please take your card and keep it." << endl;

return 1;

}

“class.staff.h”

#pragma once

#include <iostream>

#include <string>

#include "class\_ATM.h"

#include <vector>

#include <fstream>

#include <sstream>

using namespace std;

class staff

{

friend class ATM;

public:

string name;

string id;

staff() //Default constructor

{

ifstream fin("staff.txt",ios::in);

long int iid;

fin >> iid;

fin.close();

std::stringstream ss;

ss << iid;

ss >> id;

name = "staff" + to\_string(iid++);

ofstream fout("staff.txt", ios::out);

fout << iid;

fout.close();

}

staff(const staff & s) { name = s.name; id = s.id; } //Copy constructor

// ~staff() { cout << "Staff's destructor called!" << endl; }//Destructor function

void passwordChange(); //change the password

void checkATM(const ATM& a); // Maintain and update ATM. Check ATM inventory and remind the staffs.

};

static staff s1, s2, s3, s4, s5, s6, s7, s8, s9, s10;

static vector<staff> staffs = { s1, s2, s3, s4, s5, s6, s7, s8, s9, s10 }; //10 staffs initialized by default

“class\_staff.cpp”

#include "class\_staff.h"

#include"functions.h"

void staff::passwordChange()

{

cout << "staffs:{" << endl << "Please provide your bank card numberand your id: " << endl;

int count = 0;

while (count < 5)

{

cout << "Please provide your bank card number and your id: " << endl;

string number;

string id;

cin >> number >> id;

if (idToNumber(id, number)) // Call the function to verify the card number and ID.

{

while (1)

{

cout << "Please enter a new password:" << endl;

string newPassword;

cin >> newPassword;

string newPassword2;

cout << "Please enter your new password again to make sure:" << endl;

cin >> newPassword2;

if (newPassword2 == newPassword)

{

thawAndChange(number, newPassword);

cout << "Password modified successfully!" << endl;

break;

}

else

cout << "Two different passwords,please operate according to the prompt again!" << endl;

}

break;

}

else

{

cout << "Wrong card number or id." << endl;

count++;

}

}

if (count >= 5)

cout << "Please come when you remember your id and card number!" << endl;

return;

}

void staff::checkATM(const ATM& a)

{

cout << endl << "ATM" << a.id << " has been maintained daily!" << endl;

if (a.money <= 10000)

cout << "ATM" << a.id << " has insufficient inventory, the current inventory is:" << a.money << endl;

}

“class\_user.h”

#pragma once

#include<iostream>

#include<string>

#include<fstream>

#include<sstream>

using namespace std;

class user

{

public:

string name;

user() :name("xxx"), id("00000000000"), tel("00000000000"), cardNumber("000000"), cardPassword("000000"),balance(0),freeze(0){} //Default constructor

user(const user & a)

{

name = a.name; id = a.id; tel = a.tel; cardNumber = a.cardNumber;

cardPassword = a.cardPassword; balance = a.balance; freeze = a.freeze;

}//Copy constructor

// ~user() { cout << "User's destructor called!" << endl; }//Destructor function

//\*\*\*Show user's information;

void show\_user();

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Account opening function \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void Open\_account();

private:

string id;

string tel;

string cardNumber;

string cardPassword;

double balance;

int freeze;

};

“class.user.cpp”

#include "class\_user.h"

void user::show\_user()

{

cout << "name: " << name << endl << "id: " << id << endl << "tel: " << tel << endl <<

"cardNumber: " << cardNumber << endl << "balance: " << balance << endl;

}

void user::Open\_account()

{

cout << "Please enter your name, ID and telephone number in order." << endl;

cin >> name >> id >> tel;

long int card\_number;

ifstream fin0("cardnumber.txt", ios::in);

fin0 >> card\_number;

cardNumber = to\_string(card\_number++);

fin0.close();

ofstream fout("cardnumber.txt", ios::out);

fout << card\_number;

fout.close();

while (1)

{

cout << "Please enter the password." << endl;

string p1;

cin >> p1;

cout << "Please enter the password again to make sure!" << endl;

string p2;

cin >> p2;

if (p1 == p2)

{

cardPassword = p1;

break;

}

else

{

cout << "The two passwords entered are inconsistent, please enter again!" << endl;

}

}

// Write information to a file

fstream fin("password.txt");

if (!fin)

{

cerr << "open error!" << endl;

exit(1);

}

fin.seekp(0L, ios::end);

fin << endl;

fin << "NAME: " << name << endl;

fin << "tel; " << tel << endl;

fin << "id: " << id << endl;

fin << "number: " << cardNumber << endl;

fin << "password: " << cardPassword << endl;

fin << "freeze: " << 0 << endl;

fin.close();

fstream fin2("balance.txt");

if (!fin2)

{

cerr << "open error!" << endl;

exit(1);

}

fin2.seekp(0L, ios::end);

fin2 << endl;

fin2 << "number: " << cardNumber << endl;

fin2 << "balance: " << "0 " << endl;

fin2.close();

cout << "Congratulations! Dear " << name << ". The account was opened successfully. Your information is:" << endl;

show\_user();

}

“fuction.h”

#pragma once

#include <iostream>

#include <string>

#include<fstream>

#include<sstream>

#include <cstring>

using namespace std;

string enterNumberPassword();

double checkMoney(const string& number) ;

void updateMoney(const string& number, double money);

int idToNumber(string id, string number) ;

void thawAndChange(string number, string newPassword) ;

int rightPassword(string number, string password);

int searchNumber(string number);

//bool judgeMoney(double money); // When accessing money, judge whether it is a multiple of 100.

“fuction.cpp’

#include "class\_staff.h"

#include "class\_ATM.h"

#include "functions.h"

string enterNumberPassword()

{

int count = 0;

while (1)

{

cout << endl << "Please enter your card number: ";

string number;

cin >> number;

if (searchNumber(number))//correct card number

{

if (count >= 5) //Error in entering password more than five times. find the corresponding card number location in password.txt file and modify freeze to 0

{

fstream fin("password.txt");

if (!fin)

{

cerr << "open error!" << endl;

exit(1);

}

while (!fin.eof())

{

char c;

fin >> c;

if (c == 'n')

{

fin.seekg(7L, ios::cur);

string x; //correct number

fin >> x;

if (number == x) //If it is the same, it will jump out of the loop, indicating that the corresponding card number is found and the freeze is modified to 1

{

break;

}

}

}

fin.seekp(28L, ios::cur);

fin << "1";

fin.close();

cout << "Your account has been frozen, please find the staff to unfreeze!" << endl;

throw count; //throw a mistake(count)

break;

}

cout << "The card number is available!" << endl << endl;

cout << "Please enter the password: ";

string password;

cin >> password;

if (rightPassword(number, password))

{

cout << "Login successfully!" << endl << endl;

return number;

}

else

{

cout << "Incorrect password, please enter again!" << endl;

count++;

}

}

else

cout << "The card number is inexistent, please enter again!" << endl;

}

}

double checkMoney(const string& number)

{

fstream fin("balance.txt", ios::in);

if (!fin)

{

cerr << "open error!" << endl;

exit(1);

}

while (!fin.eof())

{

char c;

fin >> c;

if (c == 'n')

{

fin.seekg(7L, ios::cur);

string x;

fin >> x;

if (number == x)

break;

}

}

fin.seekg(11L, ios::cur);

string balance;

fin >> balance;

fin.close();

return stod(balance);

}

void updateMoney(const string& number, double money)

{

fstream fin("balance.txt");

if (!fin)

{

cerr << "open error!" << endl;

exit(1);

}

while (!fin.eof())

{

char c;

fin >> c;

if (c == 'n')

{

fin.seekg(7L, ios::cur);

string x;

fin >> x;

if (number == x)

break;

}

}

fin.seekp(11L, ios::cur);

fin << " "; //blank\*20

fin.seekp(-20L,ios::cur);

fin << money; //Note that if the balance is 99999, it will be 100 after change, and 10099 will be obtained after actual writing.

//Solution: Change the file format and force the balance to be digital.

cout << "Your balance has been updated to:" << money << endl << endl;

fin.close();

}

int idToNumber(string id, string number)

{

fstream fin("password.txt", ios::in);

if (!fin)

{

cerr << "open error!" << endl;

exit(1);

}

while (!fin.eof())

{

char c;

fin >> c;

if (c == 'i')

{

fin.seekg(3L, ios::cur);

string x; //correct id

fin >> x;

if (id == x)

break;

}

}

fin.seekg(10L, ios::cur);

string y;//correct number

fin >> y;

fin.close();

if (y == number)

return 1;

else

return 0;

}

void thawAndChange(string number, string newPassword)

{

fstream fin("password.txt");

if (!fin)

{

cerr << "open error!" << endl;

exit(1);

}

while (!fin.eof())

{

char c;

fin >> c;

if (c == 'n')

{

fin.seekg(7L, ios::cur);

string x; //correct number

fin >> x;

if (number == x)

break;

}

}

fin.seekp(12L, ios::cur);

//change the password

fin << newPassword;

//unfreeze

fin.seekp(10L, ios::cur);

fin << "0";

fin.close();

return;

}

int rightPassword(string number, string password)

{

fstream fin("password.txt", ios::in);

if (!fin)

{

cerr << "open error!" << endl;

exit(1);

}

string x;

while (!fin.eof())

{

char c;

fin >> c;

if (c == 'n')

{

fin.seekg(7L, ios::cur);

string x;

fin >> x;

if (number == x)

{

fin.seekg(12L, ios::cur);

break;

}

}

}

string y;

fin >> y;

fin.close();

if (password == y)

return 1;

else

return 0;

}

int searchNumber(string number)

{

ifstream fin("password.txt", ios::in);

if (!fin)

{

cerr << "open error!" << endl;

exit(1);

}

while (!fin.eof())

{

char c;

fin >> c;

if (c == 'n')

{

string snum;

fin.seekg(7L, ios::cur);

fin >> snum;

if (number == snum)

{

fin.close();

return 1;

}

}

}

fin.close();

return 0;

}

“main.cpp”

#include "functions.h"

#include "class\_ATM.h"

#include "class\_staff.h"

#include "class\_user.h"

#include <cstdlib>

#include <ctime>

int main()

{

cout << "Do you have an account?" << endl;

cout << "1. Yes 2. No" << endl;

while (1)

{

int yesOrNo;

cin >> yesOrNo;

if (yesOrNo == 1)

{

break;

}

else if (yesOrNo == 2)

{

user u1;

u1.Open\_account();

break;

}

else

{

cout << endl << "Please enter the correct option(1 or 2)!" << endl;

}

}

ATM a1, a2, a3, a4, a5;

vector<ATM> atms = { a1, a2, a3, a4, a5 }; //Five ATM are initialized by default

srand((int)time(NULL));

int randIndex = rand() % 5;

string number = atms[randIndex].login();

atms[randIndex].display();

atms[randIndex].operate(number);

atms[randIndex].logout();

cout << endl << endl << "staff[" << staffs[rand() % 10].id << "]: " << endl;

staffs[rand() % 10].checkATM(atms[randIndex]);

system("pause");

return 0;

}