**University of Central Punjab**

**CSCP1024 Object Oriented Programming**

**Assignment # 2**

**Submission Date: May 27, 2017**

Instructions

1. This is an individual assignment.
2. Cheating is not allowed.
3. Assignment with compilation error(s) will not be considered.
4. Submit your assignment on LMS.
5. This assignment is given to practice all object oriented concepts (we have studied so far) including inheritance and polymorphism

**Assignment Statement:**

In this assignment you are going to implement a Bank Management System from which users can manage their accounts. There are two types of users, Customers and Administrators. Both are presented with their own menus (after login of course). Customers can use the system to withdraw cash, transfer cash from one account to another, deposit cash and get their current balance. Administrators can create, delete, view and update accounts of different users. They must also be able to view certain reports about users and accounts. All data should be stored in a flat file system.

Customer and administrator both have common attributes name, address and login details. In further sections, separate functionalities have been mentioned for both customer and administrator.

Furthermore, customer will be of two types saving account holder, current account holder. There are some constraints for saving account holder. Saving account holder will have minimum balance limit of 10,000. In all the functionalities of customer, you have to apply this limit.

e.g. if saving account customer is withdrawing cash then there must be check that after withdrawal, minimum balance should be 10,000.

**Requirements:**

When your program starts, it should be displaying a login screen. User will be asked to enter a login and 4 digit pin code. The system verifies the login and pin and displays an error if it is incorrect. If the user types the pin code incorrectly three times consecutively then the system should disable that login until further notice (i.e. the Administrator changes the status of the user).

Note: The writing in green is entered by the user and input must be through command line.

Enter login: **Adnan123**

Enter Pin code: **12345**

**Customer Menu:**

A customer is then taken to the customer option menu where he will select one of the following options;

1----Withdraw Cash

2----Cash Transfer

3----Deposit Cash

4----Display Balance

5----Exit

Please select one of the above options:

**1----Withdraw Cash**

The user must be displayed a menu to select the mode of withdrawal as follows:

a) Fast Cash

b) Normal Cash

Please select a mode of withdrawal:

**a) Fast Cash**

In case of fast cash the user must be presented with a menu such as the one below and asked to choose one of the predefined denominations of money. If he chooses withdraw, the user is asked to select the amount from the options given. No matter which option the user uses to withdraw the money the system must check that the amount is valid (i.e. there is enough money in the account).

1----500

2----1000

3----2000

4----5000

5----10000

6----15000

7----20000

Select one of the denominations of money: 1

Are you sure you want to withdraw Rs.500 (Y/N)? Y

Cash Successfully Withdrawn!

Do you wish to print a receipt (Y/N)? Y

Account #12

Date: 14/09/2005

Withdrawn: 500

Balance: 154500

**b) Normal Cash**

In case of normal cash, the user should be asked the amount he wishes to withdraw. In this case here is no compulsion that the amount should be a multiple of 500. However, the amount must be valid.

Enter the withdrawal amount: 3600

Cash Successfully Withdrawn!

Do you wish to print a receipt (Y/N)? Y

Account #12

Date: 14/09/2005

Withdrawn: 3600

Balance: 154500

**2----Cash Transfer**

If the user selects transfer cash he is asked to specify the amount in multiples of five hundred that he wishes to transfer. Then he should be asked to enter the account number to which he wishes to transfer the money. The user must be asked to enter the account number twice to make sure he got the correct number. In addition the second time he enters the account number he should also be able to see the name of that account holder to make sure it is the right person.

For example,

Enter amount in multiples of 500: 3500

Enter the account number to which you want to transfer: 15

You wish to deposit Rs 3,500 in account held by Mr. Usman

Ismail; If this information is correct please re-enter the account number: 15

Transaction confirmed.

Do you wish to print a receipt (Y/N)? Y

Account #12

Date: 14/09/2005

Amount Transferred: 3500

Balance: 154500

**3----Deposit Cash**

If the user selects deposit cash he is asked to specify the amount that he wishes to deposit into the account. Of course there is no max limit to how much money is deposited. E.g:

Enter the cash amount to deposit: 12562

Cash Deposited Successfully.

Do you wish to print a receipt (Y/N)? Y

Account #12

Date: 14/09/2005

Deposited: 12562

Balance: 154500

**4----Display Balance**

This obviously displays the balance on the screen. It is similar to receipt (i.e. it has date account number etc) but it does not have any transactions.

For example:

Account #12

Date: 14/09/2005

Balance: 154,500

**Administrator Menu**

If the user who logs in is an administrator he should be presented with the following menu,

1----Create New Account.

2----Delete Existing Account.

3----Search for Account.

4----Exit

If the user selects first option then he is asked to enter account information. One piece of information at a time and the screen should be cleared after each entry. The system should check the validity of the data i.e. type can only be ‘Savings’ or ‘Current’.

Login: Asim123

Pin Code: 12345

Holders Name: AsimJaved

Type (Savings,Current): Savings

Starting Balance: 6000

Status: Active

Obviously, an account number has to be assigned to this newly created account. For this purpose, you are required to check the last account number created and add one to it. So, if there exists an account number 18 in the file (and there is no Account # 19), then 19 should be account number attributed to this account. The administrator must be informed of this after he finishes making the account i.e.

Account Successfully Created – the account number assigned is: 19

**2---Delete Existing Account**

If the user selects this option he is asked to enter an account number. He is then asked confirm that this account should be deleted.

Enter the account number to which you want to delete: 15

You wish to delete the account held by Mr Usman Ismail; If

this information is correct please re-enter the account

number: 15

Account Deleted Successfully

**4---Search for Account**

This will display a menu asking the admin to enter any search criteria for each field. If the user leaves a field blank then it should not be included in the search i.e. if user does not specify holder name then all accounts matching other criteria with any holder name should be displayed.

SEARCH MENU:

Account ID:

User ID:

Holders Name:

Type (Savings Current): Savings

Balance: 80,000

Status: Active

==== SEARCH RESULTS ======

Account ID User ID Holders Name Type Balance Status

15 44045 Java Dude Savings 80,000 Active

18 43075 M. Amir Savings 80,000 Active

Please note that this search is done by ‘AND’ing the search criterias i.e. an account’s information should be listed in the search results if an only if all the search criteria’s are met.

**Design Cues and Requirements**

Use flat file systems to store all data. The format of the files is given below but broadly you should have one file for login information (login, pin code and user type) another file for user information.

* Define proper classes to solve problem using Object Oriented Paradigm.
* All data entry points should have proper error checks and error messages.
* All data entry is through command line interface.
* There must be proper commenting throughout your code.
* We expect that your system should be very robust, so apply intelligent checks; in no case should your program crash or produce undesirable results.
* Use Function and Variable names intelligently. The harder your code is to check, the higher are the chances of you getting lower marks. If your program crashes for some reason during checking, I may be just scrolling through your code and give you marks on the quality of the code. So, it’s purely in your interest to use nice functions and variables.
* File names should be as following:

(account.txt)

< User ID>;<Account ID>;< Holders Name>; <Type>;< Balance:>; <Status>

(login.txt)

<User ID>;<Login>;<Pin code>

**One more Functionality**

However the login file must be encrypted when it is stored to disk and decrypted when it is needed. We are going to use a very simple encryption technique which is as follows.

For alphabets we swap A with Z, B with Y and so on.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Z Y X W V U T S R Q P O N M L K J I H G F E D C B A

For Number we have

0123456789

9876543210

***Note: Submit UML class diagram after one day of Assignment Announcement.***