In this assignment you are going to implement an ATM system from which users can manage their accounts. There are two types of users, Customers and Administrators. Both are presented with their own menus

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.

* **Use OOP features and Variable names intelligently. The lesser use of OOP features (classes, methods, encapsulation, etc. ) will increase the chances to get lower marks.**
* 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 through out your code.
* Your system should be very robust, so apply intelligent checks; in no case should your program crash or produce undesirable results.
* In the problem description, the text in green color is supposed to be provided by the user.
* Once the system is ready, test it by creating four dummy users (two administrators and two customers).

# Content / Requirement

When your program starts, it displays a login screen. User will be asked to enter a login and 5 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

e.g.

Enter User ID: ABCDEF

Enter Pin code: 54321

## 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:

1. Fast Cash
2. 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: 14/02/2021

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 there 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: 14/02/2021

Withdrawn: 3600

Balance: 154500

To make things a little more interesting**,** a single account holder cannot withdraw more then 20,000 in one day. (If customer withdraws 15,000 once and tries to withdraw 6,000, customer should not be allowed but customer can withdraw 4,000). Please NOTE that this applies to BOTH Fast Cash and Normal Cash. i.e. the joint withdrawal in both these modes should not exceed 20,000.

### 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. ABC; 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: 14/02/2021

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: 14/02/2021

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: 14/02/2021

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----Update Account Information.

4----Search for Account.

5----View Reports

6----Exit

### 1----Create New Account

If the user selects this 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: ABC123

Pin Code: 54214

Holders Name: ABC XYZ

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 (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

### 3---Update Account Information

The program should first ask the admin to enter the account number to be updated:

Enter the Account Number: 15

Then, a menu should be displayed which shows the admin all the old information followed by a step-by-step inquiry to change particular fields. If he leaves a field blank then the old information is propagated i.e. the previous information remains unchanged. (Again, the screen should be cleared after each entry.)

Account # 15

Type: Savings

Holder: Mr Java Dude

Balance: 50,000

Status: Disabled

Please enter in the fields you wish to update (leave blank otherwise):

Login: java666

Pin Code: 45678

Holders Name: *(for example, I leave this blank and simply press enter)*

Status: Active

Your account has been successfully been updated.

### 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. Umair 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.

### 5---View Reports

If the user selects view reports then the he should be asked to specify one of two reports; For the first (by amount) the user will specify a minimum and maximum range for the balance of an account. All accounts with balance in between the range must be displayed in a similar fashion to the one shown above in search for accounts. In the second option the system shows all transactions made by a specified customer within a specified date range (inclusive). i.e. The user enters an account number and a minimum and maximum date. All transactions between the two dates need to be shown.

1---Accounts By Amount

2---Accounts By Date

For example, if the user enters 1:

Enter the minimum amount: 12500

Enter the maximum amount: 190112

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

Account ID User ID Holders Name Type Balance Status

11 44045 PRQ M Savings 12,500 Active

24 43075 BZC RED Savings 190,111 Active

Or if the user enters 2:

*Note: The format for the date must always be Day/Month/Year [DD/MM/YYYY]*

Enter the starting date: 12/12/2020

Enter the ending date: 19/12/2020

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

Transaction Type User ID Holders Name Amount Date

Cash Withdrawal 44045 Bob Jack 2,500 17/12/2021