

Bank System Using Java Languages And Files

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A **bank** is a financial institution that accepts deposits from the public and make withdraw operation from specific account , bank system also allows the user to transfer money from account to another account after insure that the two accounts are belong to this bank.

Why Files?

When a program is terminated, the entire data is lost. Storing in a file will preserve your data even if the program terminates. If you have to enter a large number of data, it will take a lot of time to enter them all. However, if you have a file containing all the data, we can easily access the contents of the file using a few commands . we can easily move your data from one computer to another without any changes.

This Project has been written using java language , the data has been stored into txt file .the program consist of three main classes .

The first class is the parent class with consist of constructor methods (parameterized constructor and simple construction)to initialize the objects with class variable (name, age, account number , balance).

This class is abstract class because it has abstract methods. these methods has them definitions but in another class which inherit Bank Account class.

The second class is "Current class" , this class is extend Parent class (BankAccount class) and it make a definition for the abstract methods in parent class in addition it has two method we use them to make deposit for any account that register with as before and the second method is to make withdraw amount for any account that register with before also.

Third class (Account) is contain main method , inside main method all objects that deal with files (read from, write to).

At beginning the main menu will appear to user which ask user to choose one of list or menu options.

The idea in this program is to write objects into arraylist before save them in arraylist , and store object that come from file into arraylist also , we read/ write data with file as an object so when there is operation on data that need to read object from file such that (edit , delete, show) we use variable which has type list iterator , this object allow us two test each object of arraylist .

Methods Explanation :There is many method we use

Add method algorithm

1. Open file that the information write on.
2. Define arraylist that store object before write them into file
3. Ask the user about how many accounts does he want
4. Ask the user about each account information (account number , account name , account age , account balance).
5. Add each account as element into array list
6. Write arraylist into the file as an object.

Display method algorithm

1. Open file that we want to read information from.
2. Define arraylist to store object before display .
3. Read each object in arraylist by using list Iteration , each object as an account.
4. Read each object (account) information like (name , age ...) by using get methods which return object variable value.
5. Display information that come from get methods using `system.out.println`.

Edit method algorithm

1. In this method at beginning we have to insure about account existence, we search about the account by account number . the Edit method algorithm follow the bellow steps:

2. Open file that the information read from then write on.
3. Define arraylist to store object before search operation .
4. Ask the user to enter account number that he want to edit his information.
5. Ask the user to enter new account information (name , age balance) . her edit the account number is not available because it act as identifier .
6. Read each object in arraylist by using list Iteration , then compare the object (account number)with account number that the user enter.
7. If it's found we replace the object with new object conation new account information by use " set " method, set method is one of listiteraton object use to replace the object with another one.
8. Rewrite arraylist into the file as an object.

Delete method algorithm

Here we also have to insure about account exitance, we search about the account by account number . the Edit method algorithm follow the bellow steps:

1. Open file that the information read from then write on.
2. Define arraylist to store object before search operation .
3. Ask the user to enter account number that he want to edit his information.
4. Read each object in arraylist by using list Iteration , then compare the object (account number)with account number that the user enter.
5. If its found we delete " remove " method , remove method is one of listiteraton object method use to delete the object from.
6. Rewrite arraylist into the file as an object.

Deposit method algorithm

Here we also have to insure about account existence, we search about the account by account number . the Edit method algorithm follow the bellow steps:

1. Open file that the information read from then write on.
2. Define arraylist to store object before search operation .
3. Ask the user to enter account number that he want to edit his information.
4. Ask the user to enter amount that he want to deposit .
5. Read each object in arraylist by using list Iteration , then compare the object (account number)with account number that the user enter.
6. If its found we add the amount on the object balance then we replace old balance with new object balance using " set " method, because deposit operation is edit operation also.
7. Rewrite arraylist into the file as an object.

Withdraw method algorithm

Here we also have to insure about account existence, we search about the account by account number . the Edit method algorithm follow the bellow steps:

1. Open file that the information read from then write on.
2. Define arraylist to store object before search operation .
3. Ask the user to enter account number that he want to edit his information.
4. Ask the user to enter amount that he want to deposit .
5. Read each object in arraylist by using list Iteration , then compare the object (account number)with account number that the user enter.

6. If its found we compare amount with the object balance if the amount is more that object balance then we print error message, but if amount is less that or equal object balance then we subtract the amount from object balance then we replace old object balance with new object balance using " set " method, because deposit operation is edit operation also.
7. Rewrite arraylist into the file as an object.

transfer method algorithm

Here we also have to insure about account existence, we search about the account by account number . the Edit method algorithm follow the bellow steps:

1. Open file that the information read from then write on.
2. Define arraylist to store object before search operation .
3. Ask the user to enter account number1 that he want to transfer money from
4. Ask the user to enter account number2 that he want to deposit money to
5. Ask the user to enter amount that he want to transfer.
6. Read each object in arraylist by using list Iteration , then compare the object (account number)with account number1 that the user enter to transfer from and compare it with account number2 that user want to deposit to .
7. If the both accounts are found we compare amount with the first object balance if the amount is more that object balance then we print error message, but if amount is less that or equal object balance then we subtract the amount from first object balance and add the the amount into second object balance then we replace old objects balance with new object balance using " set " method
8. Rewrite arraylist into the file as an object.

Search method algorithm

Same to display algorithm but at first we ask the user to enter account number to search about the display its information if it is found

How the program work?

When the program run , user menu will appear to ,this menu tell user the available options with them number then ask user to enter him choice , such following figure:

```
#####
1 - Add New Accounts
2 - Display All Accounts Information
3 - Edit Information of Spesific Account
4 - Delete Account From the File
5 - Deposit
6 - Withdraw
7 - Transfer
8 - Exit ...
#####
Enter you choice
```

When user enter number 1 the program ask him about the number of accounts that he want to create then ask him to insert accounts information (details) . Account Number , Name , Age , Balance...

```
#####
Enter you choice
1
How many Account Do you want
2
Enter Accout Number
1
Enter Accout User Name
Ahmed
Enter Age
27
Enter Accout Balance
7000
Enter Accout Number
2
Enter Accout User Name
24
```

If user want to display all accounts details he can choose Display All Accounts Information choice by press number 2 from keyboard ...

```
#####  
Enter you choice  
2  
Account Holder Details  
Name : Ahmed  
Age of the account holder : 27  
Account Number : 1  
Account Balance : 7000  
  
Account Holder Details  
Name : reem  
Age of the account holder : 23  
Account Number : 2  
Account Balance : 9000
```

When user want to edit account details he should choose number 3 from the user menu , the choice will ask user to insert account number to search about it and also ask user about new name ,age and balance . Then rewrite it into file.

```
#####  
Enter you choice  
2  
Account Holder Details  
Name : Zeen  
Age of the account holder : 27  
Account Number : 1  
Account Balance : 6000  
  
Account Holder Details  
Name : reem  
Age of the account holder : 23  
Account Number : 2  
Account Balance : 9000
```

Figure 1 Account Information before edit

```
#####  
Enter you choice  
2  
Account Holder Details  
Name : Ahmed  
Age of the account holder : 27  
Account Number : 1  
Account Balance : 7000  
  
Account Holder Details  
Name : reem  
Age of the account holder : 23  
Account Number : 2  
Account Balance : 9000
```

Figure 2 Account Information After edit

The choice number 4 is ask user account number to delete.

The choice number 5 is make Deposit operation of account, at first ask user to enter account number to search and deposit to , and ask he to enter amount that he want to deposit.


```
#####
Enter you choice

5
-----
Enter Account Number that you want to make Deposit to
1
Enter amount
700
-----
```

If user want to make withdraw operation on account he must enter account number and amount (the account must be found and the amount should be less or equal to the balance if not there is error message that will appear to the user). If user want to make transfer amount from account to another , he should choose choice number 7 , the program will ask user to enter account number witch he want to transfer from , and account number with he want to transfer amount to , then ask him to enter he amount which he want to transfer ...

```
#####
Enter you choice
2
Account Holder Details
Name : Zeen
Age of the account holder : 27
Account Number : 1
Account Balance : 6000
```

Figure 2 Balance Befor Deposit

```
#####
Enter you choice
2
Account Holder Details
Name : Zeen
Age of the account holder : 27
Account Number : 1
Account Balance : 6700
```

Figure 3 Balance After Deposit

```
#####
Enter you choice
7
Enter Account Number that you want to Transfer Money From
2
Enter Account Number that you want to Transfer Money To
1
Enter Amount
500
Amount Received : 500
Current account Balance: 8500
Transfer was Done Successfully
```

The Two Account After transfer Operation

```
#####
Enter you choice
2
Account Holder Details
Name : Zeen
Age of the account holder : 27
Account Number : 1
Account Balance : 7200

Account Holder Details
Name : reem
Age of the account holder : 23
Account Number : 2
Account Balance : 8500
```

Figure 4 The Two Account before transfer Operation

```
#####
Enter you choice
2
Account Holder Details
Name : Zeen
Age of the account holder : 27
Account Number : 1
Account Balance : 6700

Account Holder Details
Name : reem
Age of the account holder : 23
Account Number : 2
Account Balance : 9000
```

Figure 5 The Two Account After transfer Operation

If user want to exit from the program, he should to choose last option from the menu (must press 8 to exit from program).

Students Contribution :

```
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```