UNIVERSITY OF WESTMINSTER

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1. INTRODUCTION

This is a JAVA console-based application developed for InterBanking Pty. The purpose of this system is to produce a next generation customer and account management system. This application has been developed for employees of the bank to add new customer accounts and bank accounts and is very user friendly serving its purpose to the fullest.

2. IMPLEMENTATION

```
package com.company;

import java.util.ArrayList;
import java.util.Scanner;



public class BankAccount_1_2 {
    private static ArrayList<customerAccount> customerAccount = new ArrayList ();
   private static  ArrayList<BankAccount> accounts = new ArrayList ();
    public static final Scanner sc = new Scanner (System.in);

    public static void main(String[] args) {

        System.out.println ("***************Welcome to Interbanking Pty.***************");
        System.out.println ("******************Account Management Unit*****************");
        System.out.println ("*************_______Login_____**************\n");
        System.out.println ("Enter Username: ");
        String empName = sc.next ();
        System.out.println ("Enter Password: ");
        String empPassword = sc.next ();

        if (!Login (empName, empPassword)) {
            System.out.println ("Please enter a valid username or password");
            main (null);
        } else
            Options ();


        char choice = '\0';

        do {
            choice = sc.next ().charAt (0);
            switch (choice) {
                case '1':
                    one ();
                    Options ();
                    break;


                case '2':
                    two ();
                    Options ();
                    break;


                case '3':
                    three ();
                    Options ();
                    break;

                case '4':
                    four ();
                    Options ();
                    break;
                case '0':
                    System.out.println("Thank you for your valuable service.");
                    System.exit (0);
                default:
                    System.out.println ("Enter your choice: ");
            }
        } while (choice != '0');

    }
```

```
    public static boolean Login(String userName, String password) {
        if (userName.equals ("admin") && password.equals ("admin")) {
            return true;
        }
        return false;
    }

    public static void Options() {
        System.out.println ("************************MAIN MENU************************");
        System.out.println ("-----------------------------------------------------------\n");
        System.out.println ("          1 - Create a new Customer Account.");
        System.out.println ("          2 - Generate a Bank Account.");
        System.out.println ("          3 - Display Bank Account Details.");
        System.out.println ("          4 - Transfer cash from bank account 1 to bank account 2
of a particular customer.");
        System.out.println ("          0 - Exit.");
        System.out.println ("_____________________________________________________________\n");

        System.out.println ("Enter your choice: ");
    }


    public static void one() {
        System.out.println ("Your choice is 1");
        System.out.println ("Enter customer's first name: ");
        String fName = sc.next ();
        System.out.println ("Enter customer's last name: ");
        String lName = sc.next ();
        System.out.println ("Enter customer's username: ");
        String username = sc.next ();
        System.out.println ("Enter password for customer: ");
        String password = sc.next ();

        customerAccount newUser = new customerAccount ();
        newUser.fName = fName;
        newUser.lName = lName;
        newUser.username = username;
        newUser.password = password;
        customerAccount.add (newUser);
    }

    public static void two() {
        System.out.println ("***************Create a bank account.*****************");
        System.out.println ("****If name matches with a name in the customer accounts list, " +
                "\na bank account will be autogenerated for the particular customer.****");
        System.out.println ("Enter customer's first name: ");
        String first = sc.next ();
        System.out.println ("Enter customer's last name: ");
        String last = sc.next ();
        BankAccount newAccount = new BankAccount ();
        //newAccount.accountNo = accountNo;
        //newAccount.accountBal = accountBal;

        for (int i = 0; i < customerAccount.size (); i++) {
            if ((customerAccount.get (i).fName.equalsIgnoreCase (first)) &&
                    (customerAccount.get (i).lName.equalsIgnoreCase (last))) {
                System.out.println ("***********Generate bank account for " + first + " " + last
+ "***********");
                System.out.println
("_____________________________________________________________\n");
                System.out.println ("Enter " + first + " " + last + "'s"+" account number(4
digits only): ");
                newAccount.accountNo = sc.nextInt ();
                while(!(newAccount.accountNo>=1000 && newAccount.accountNo<10000)){
                    System.out.println("Invalid Account Number! Please try again.");
                    System.out.println("Account Number : ");
                    newAccount.accountNo = sc.nextInt ();
                }
                System.out.println ("Enter " + first + " " + last + "'s"+" account balance in
dollars($): ");
```

```
                newAccount.accountBal = sc.nextDouble ();
                while (newAccount.accountBal<0)
                {
                    System.out.println("Invalid Account Balance! Please try again.");
                    System.out.print("Account Balance :");
                    newAccount.accountBal=sc.nextDouble();
                }
                accounts.add (newAccount);
            } else if(!((customerAccount.get (i).fName.equalsIgnoreCase (first)) &&
                    (customerAccount.get (i).lName.equalsIgnoreCase (last)))) {
                System.out.println ("Customer details mismatch. Please check customer names for
spelling errors or case sensitivity.");
            }
        }
    }

    public static void three() {
        int count = 0;
        System.out.println ("***************Display bank account details.*****************");
        System.out.println ("_____________________________________________________________\n");
        System.out.println ("***Bank details are displayed only if the bank account number
matches with the stored customer account details.***");
        System.out.println ("Enter customer's first name: ");
        String name1 = sc.next();
        System.out.println ("Enter customer's last name: ");
        String name2 = sc.next();
        for (int i = 0; i < accounts.size (); i++) {
            for (i = 0; i < customerAccount.size (); i++) {
            if ((customerAccount.get (i).fName.equalsIgnoreCase (name1)) && (customerAccount.get
(i).lName.equalsIgnoreCase (name2))) {
                System.out.println ("Account holder's full name: " +
                        customerAccount.get (i).fName + " "
                        + customerAccount.get (i).lName);
                System.out.println ("No. of accounts for customer: " +accounts.size ());
                for (i = 0; i < accounts.size (); i++){
                    count=count + 1;
                System.out.println ("Account "+count+" Balance: " + "$ " + accounts.get
(i).accountBal);}
            } else{
                System.out.println ("Customer details mismatch. Try again.");
            }}
        }
    }

    public static void four() {
        double transferAmount;
        String name1,name2;
        double account1=0;
        double account2=0;
        for (int i = 0; i < customerAccount.size (); i++) {
            do {
                System.out.println ("Enter customer's first name: ");
                name1 = sc.next ();
                System.out.println ("Enter customer's last name: ");
                name2 = sc.next ();
                if ((customerAccount.get (i).fName.equalsIgnoreCase (name1)) &&
(customerAccount.get (i).lName.equalsIgnoreCase (name2))) {
                    System.out.println ("**********You can now transfer money from account 1 to
account 2 belonging to " + customerAccount.get (i).fName +
                            " " + customerAccount.get (i).lName + ".");
                } else {
                    System.out.println ("Incorrect customer details. Please enter customer name
accurately to confirm the customer account for money transfer.");
                }
            }
            while (!((customerAccount.get (i).fName.equalsIgnoreCase (name1)) &&
(customerAccount.get (i).lName.equalsIgnoreCase (name2))));

            for (i = 0; i < accounts.size (); i++) {
                if (i == 0) {
                    account1 = accounts.get (i).accountNo;
                } else {
```

```
                    account2 = accounts.get (i).accountNo;
                }
            }
        }
                if(!(account1 == account2)){
                    System.out.println("Please enter the amount you want to transfer in dollars
from account 1 to account 2: ");
                    transferAmount = sc.nextDouble ();

                    if(account1<0){
                        System.out.println("Error! First account will have a balance of $0.00
after transfer. Transfer not possible.");
                        System.exit (0);
                    }else{
                        account1 = account1 - transferAmount;
                        account2 = account2 + transferAmount;
                    if(account1 <= 10){
                        System.out.println("Warning! First account has a balance less than
$10.");
                    }
                    if(account2 >= 100000){
                        System.out.println("Warning! Second account has reached the highest
amount that is federally insured.");
                    }
                        System.out.println("Account 1 balance after transfer: "+ account1);
                        System.out.println("Account 2 balance after transfer: "+ account2);
                    }




                }else{
                    System.out.println("Invalid account! Suggestion: Go to option 4 and view
bank account details of the customer for further clarification.");
                    Options ();
                }
            // }

        }


    //System.out.println("Please enter the amount you want to transfer in dollars from account 1
to account 2: ");
    // transferAmount = sc.nextDouble ();

    static class customerAccount {

        public Scanner sc = new Scanner (System.in);
        public String fName, lName, username, password;
        public ArrayList<BankAccount_1_2.BankAccount> accounts;
        public customerAccount(Scanner sc, String fName, String lName, String username, String
password, ArrayList<BankAccount_1_2.BankAccount> accounts) {
            this.sc = sc;
            this.fName = fName;
            this.lName = lName;
            this.username = username;
            this.password = password;
            this.accounts = accounts;

        }

        customerAccount() {        }

    }

    static class BankAccount {
        int accountNo;
        double accountBal;

        public BankAccount(int accNum, double balance) {
            this.accountNo = accountNo;
            this.accountBal = accountBal;
```

```
        }

        BankAccount() {

        }
    }
}
```

3. SCREENSHOTS

- Employee Login and Main Menu.

```
***************Welcome to Interbanking Pty.***************
******************Account Management Unit*****************
*************_______Login______**************

Enter Username:
admin
Enter Password:
admin
************************MAIN MENU*************************
------------------------------------------------------------

          1 - Create a new Customer Account.
          2 - Generate a Bank Account.
          3 - Display Bank Account Details.
          4 - Transfer cash from bank account 1 to bank account 2 of a particular customer.
          0 - Exit.
_____________________________________________________________

Enter your choice:
1
Your choice is 1
Enter customer's first name:
Dinithi
Enter customer's last name:
Jay
Enter customer's username:
dinie
Enter password for customer:
1ww
************************MAIN MENU*************************
------------------------------------------------------------

          1 - Create a new Customer Account.
          2 - Generate a Bank Account.
          3 - Display Bank Account Details.
          4 - Transfer cash from bank account 1 to bank account 2 of a particular customer.
          0 - Exit.
_____________________________________________________________
```

```
Enter your choice:
2
***************Create a bank account.*****************
****If name matches with a name in the customer accounts list,
a bank account will be autogenerated for the particular customer.****
Enter customer's first name:
Dinithi
Enter customer's last name:
Jay
***********Generate bank account for Dinithi Jay***********

Enter Dinithi Jay's account number(4 digits only):
2
Invalid Account Number! Please try again.
Account Number :
12333
Invalid Account Number! Please try again.
Account Number :
3333
Enter Dinithi Jay's account balance in dollars($):
6000
```

```
No. of accounts for customer: 2
Account 1 Balance: $ 6000.0
Account 2 Balance: $ 78955.0
************************MAIN MENU*************************
-----------------------------------------------------------

          1 - Create a new Customer Account.
          2 - Generate a Bank Account.
          3 - Display Bank Account Details.
          4 - Transfer cash from bank account 1 to bank account 2 of a particular customer.
          0 - Exit.

_____________________________________________________________

Enter your choice:
4
Enter customer's first name:
Dinithi
Enter customer's last name:
Jay
**********You can now transfer money from account 1 to account 2 belonging to Dinithi Jay.
Please enter the amount you want to transfer in dollars from account 1 to account 2:
2567
Account 1 balance after transfer: 766.0
Account 2 balance after transfer: 10355.0
************************MAIN MENU*************************
-----------------------------------------------------------

          1 - Create a new Customer Account.
          2 - Generate a Bank Account.
          3 - Display Bank Account Details.
          4 - Transfer cash from bank account 1 to bank account 2 of a particular customer.
          0 - Exit.

_____________________________________________________________

Enter your choice:
0
Thank you for your valuable service.

Process finished with exit code 0
```

4. CONCLUSION

All the required functions work efficiently, and the input data is stored in an array. The data storage is temporary, and this could be further improved.