C++ Assignment: The Banking Application

Vivian Lam

Student No. 4210

Vlam54@uwo.ca

October 2016

Computer Science 3307A - Object-Oriented Design & Analysis
University of Western Ontario, London ON
Canada N6A 3K7

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Deliverable 1: Minimum Requirements

- Ability to open/close accounts
- Give warning when not sufficient funds when withdrawing
- Ability to transfer between chequing and savings account
- Manager/customer Obtain account balances
- Give warning message to client on his/her “chequing” account will drop below the threshold of $1,000 – prior to him/her executing the operation. If s/he decides to go ahead despite the warning message, a charge of $2.00 is levied on the client for each such transaction. This levy is applied only once, when there is a crossover from above to below the threshold.
- Client is able to open multiple accounts
- The bank manager can display the account details of any given customer, or all customers, and obtain aggregate data on the funds in the bank, etc., categorised appropriately.
- Funds in the account transcend the duration of a particular user session with the bank.
- Maintenance person can login and turn on and off execution trace
- Execution trace printed to external file

Deliverable 2: Enhancement Requirements

- Implemented a login system
    - The system automatically knows what type of account (manager, customer, maintainer) from your account login ID

Deliverable 3: System code and executable

In the Debug folder open the “vleeambank.exe” to run the executable.

This application is for Windows 8.1

Please check the README before running and details regarding compiling

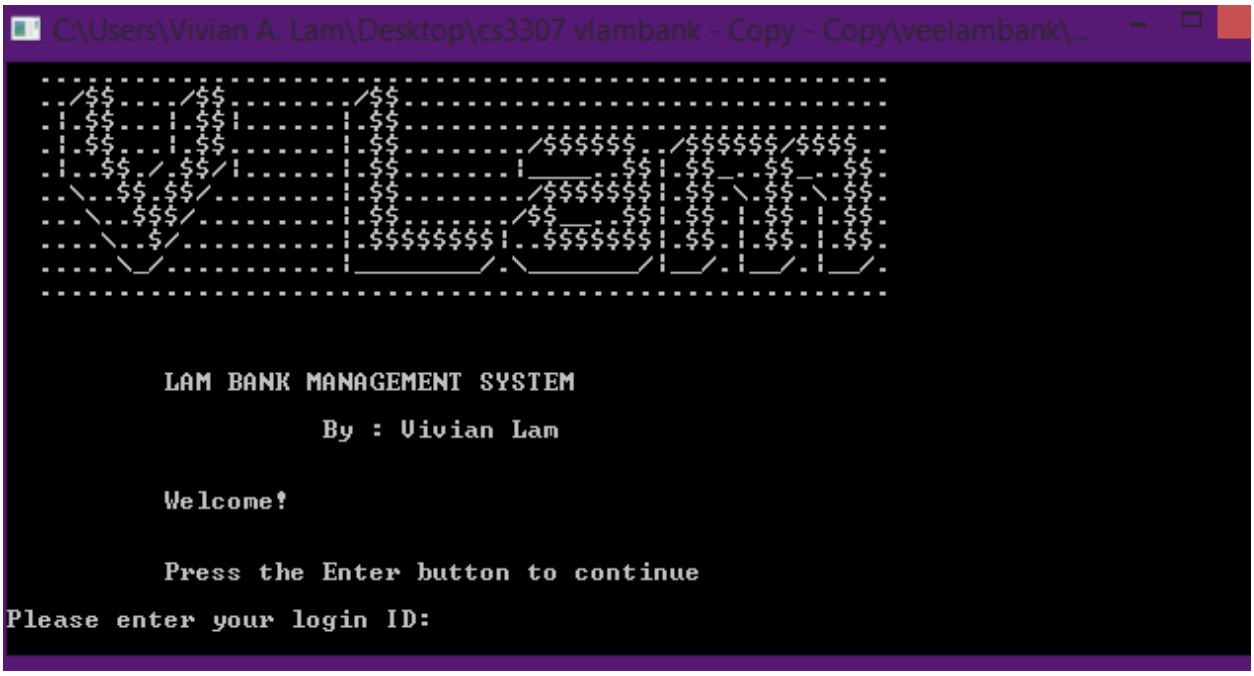
Deliverable 4: Scenarios

Scenarios (keep scrolling for screenshots):

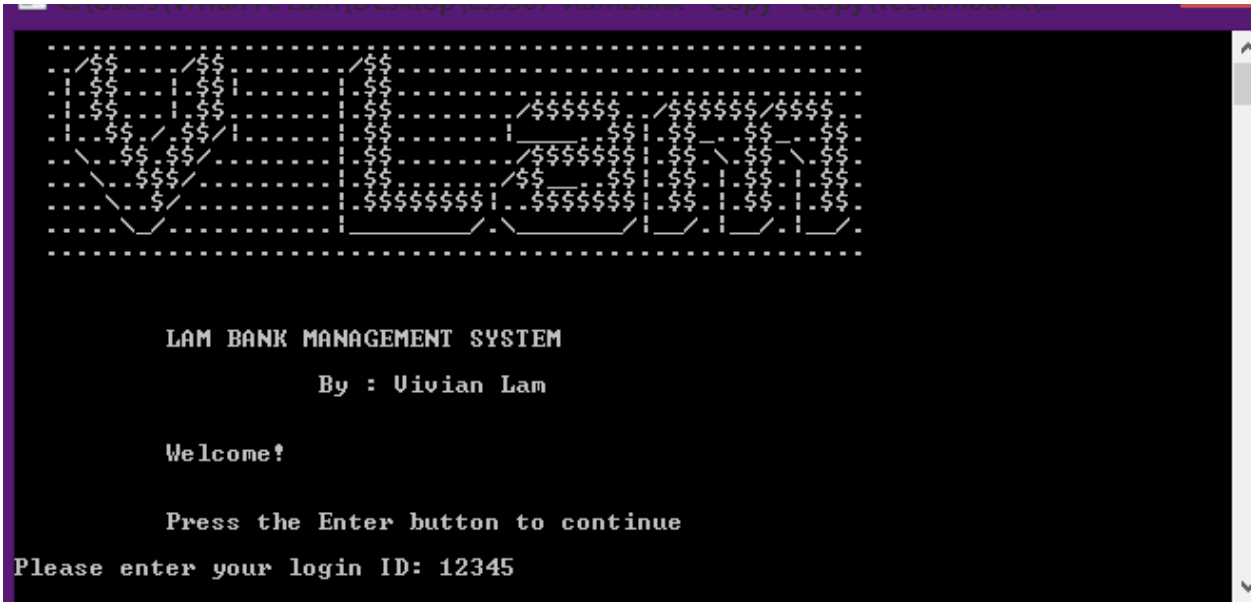
1. Client deposits funds
    - Client logs into the ATM.
    - Selects his/her Deposit account.
    - Checks the balance.
    - Deposits CAD 20.
    - System deposits the funds.
    - System displays the resultant balance.
2. Manager creates an account
    - Manager logins
    - Manager selects create an account
    - Enter in details
    - System creates a new account
    - System displays the new account data
3. Maintenance operator turns on execution trace and views the traced files
    - Maintenance operator logs in
    - Selects execution trace to be on
    - Print out execution trace
    - View the .txt file (note that it will only show the trace for this scenario because that's when execution trace was turned on)
4. Manager deletes an account
    - Manager logs in
    - Manager selects delete an account
    - Enters in the account to be deleted
    - System deletes the account
    - System shows that the account no longer exists
5. Customer transfers funds
    - Customer logs in
    - Customer selects transfer funds
    - Customer selects which account to transfer from
    - Customer selects amount
    - System transfer funds
    - System displays the new account data

2. Client deposits funds

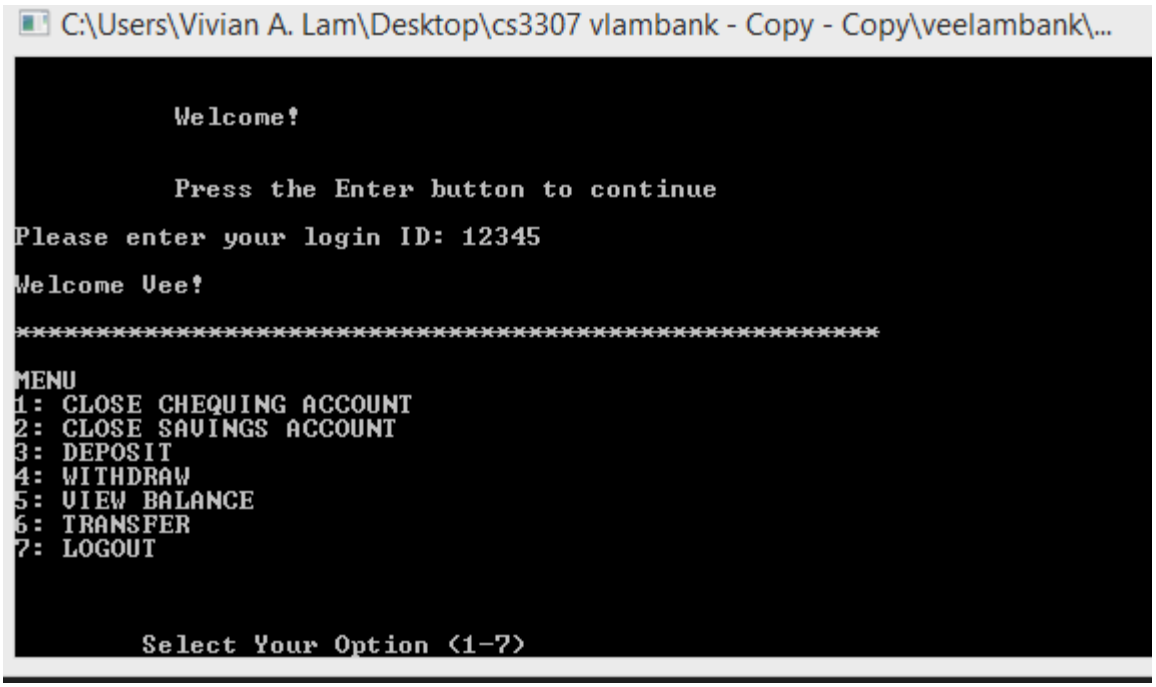
Upon loading



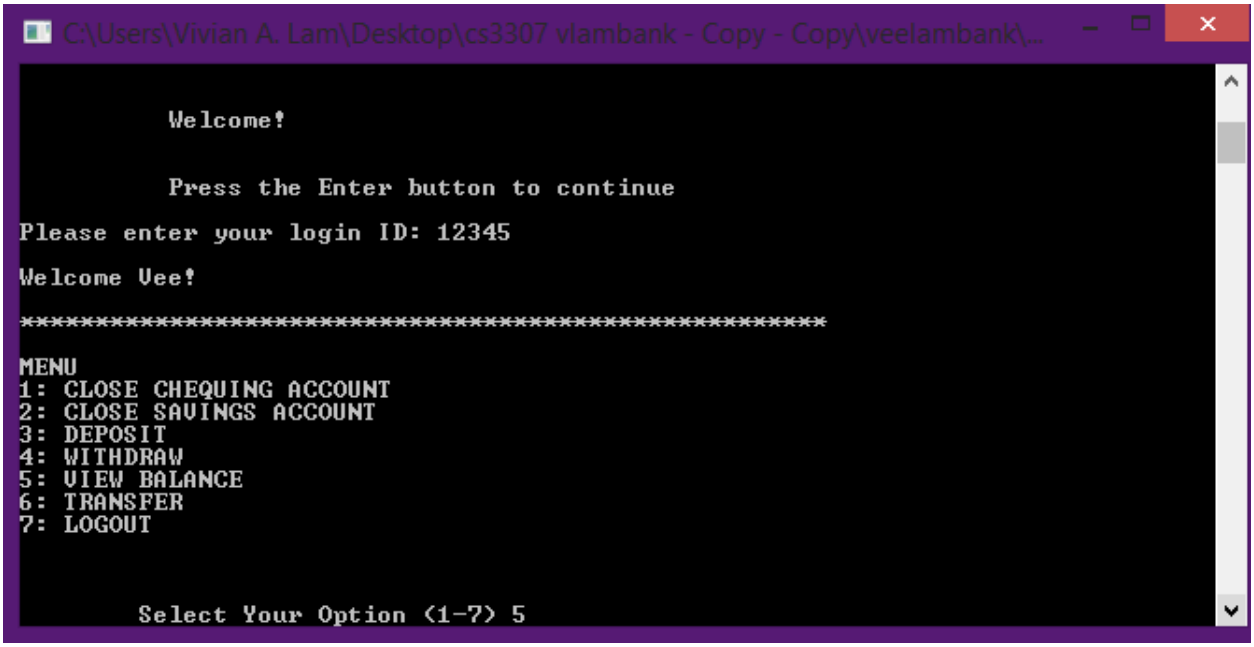
Client logs into the ATM.

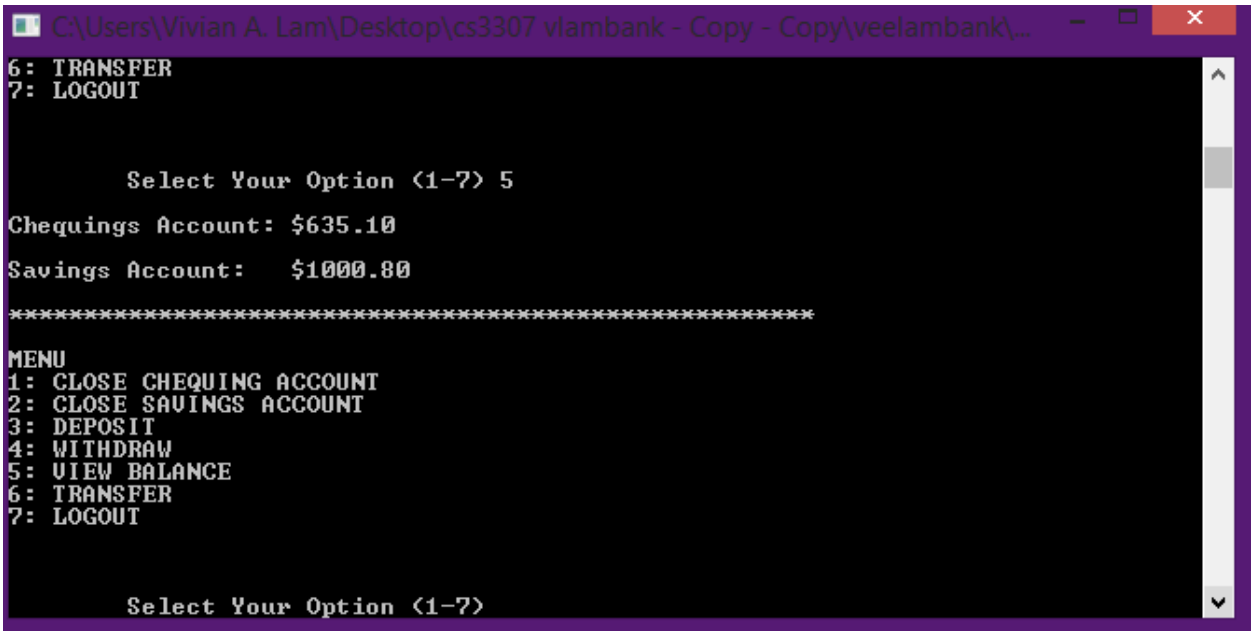


Selects his/her Deposit account.

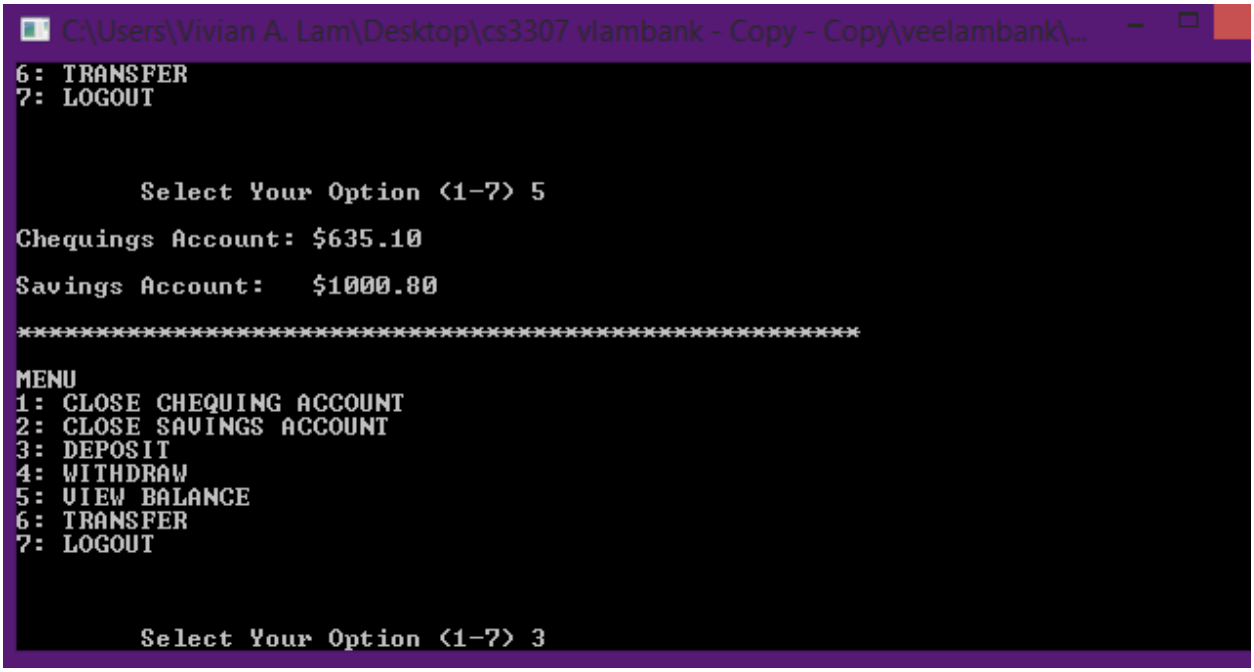


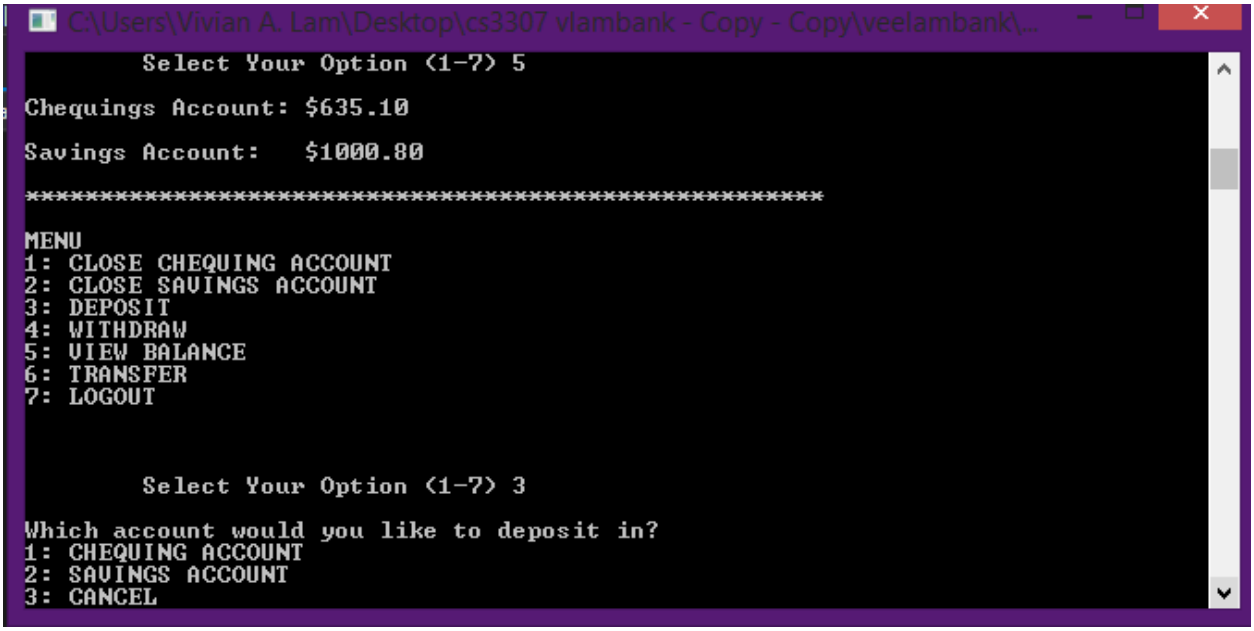
Checks the balance.

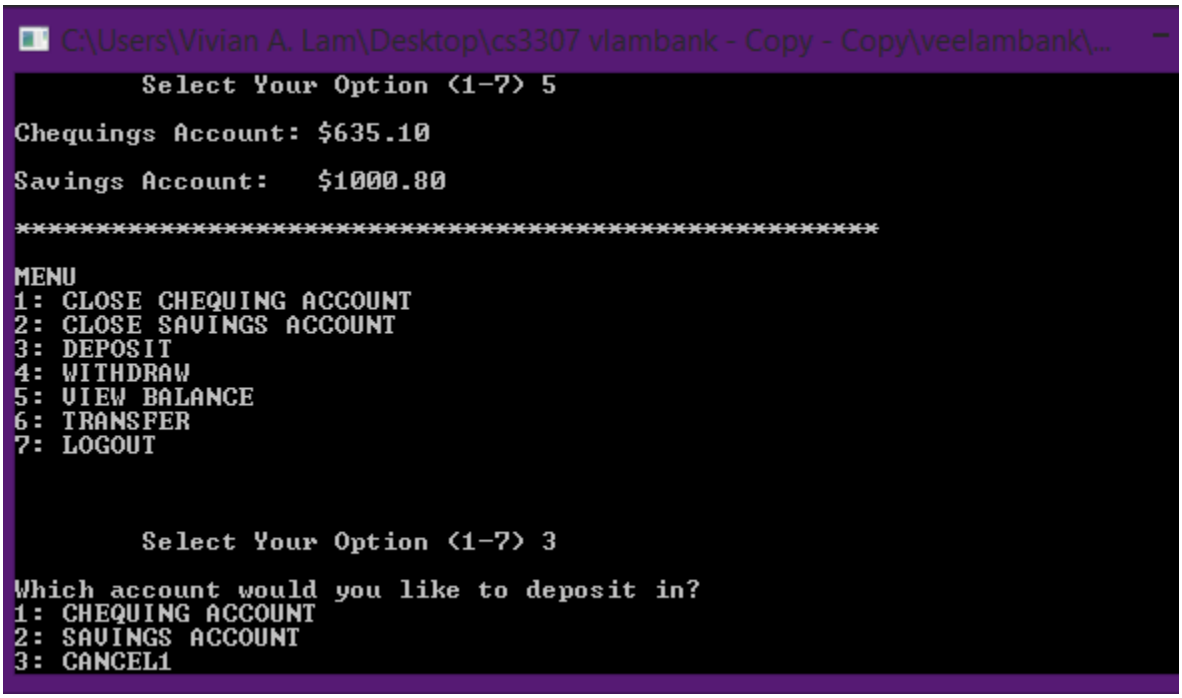




Deposits CAD 20.




C:\Users\Vivian A. Lam\Desktop\cs3307 vlambank - Copy - Copy\veelambank\...
Select Your Option (1-7) 5
Chequings Account: $635.10
Savings Account: $1000.80
****
MENU
1: CLOSE CHEQUING ACCOUNT
2: CLOSE SAVINGS ACCOUNT
3: DEPOSIT
4: WITHDRAW
5: VIEW BALANCE
6: TRANSFER
7: LOGOUT
Select Your Option (1-7) 3
Which account would you like to deposit in?
1: CHEQUING ACCOUNT
2: SAVINGS ACCOUNT
3: CANCEL


C:\Users\Vivian A. Lam\Desktop\cs3307 vlambank - Copy - Copy\veelambank\...
Select Your Option (1-7) 5
Chequings Account: $635.10
Savings Account: $1000.80
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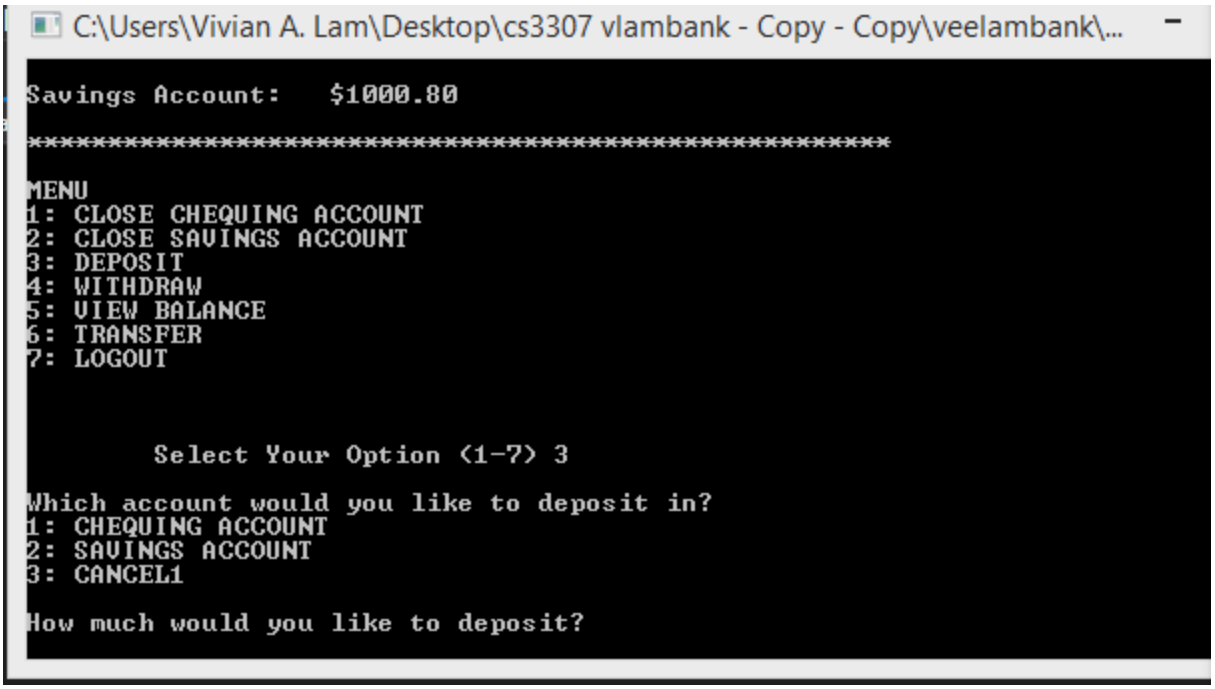
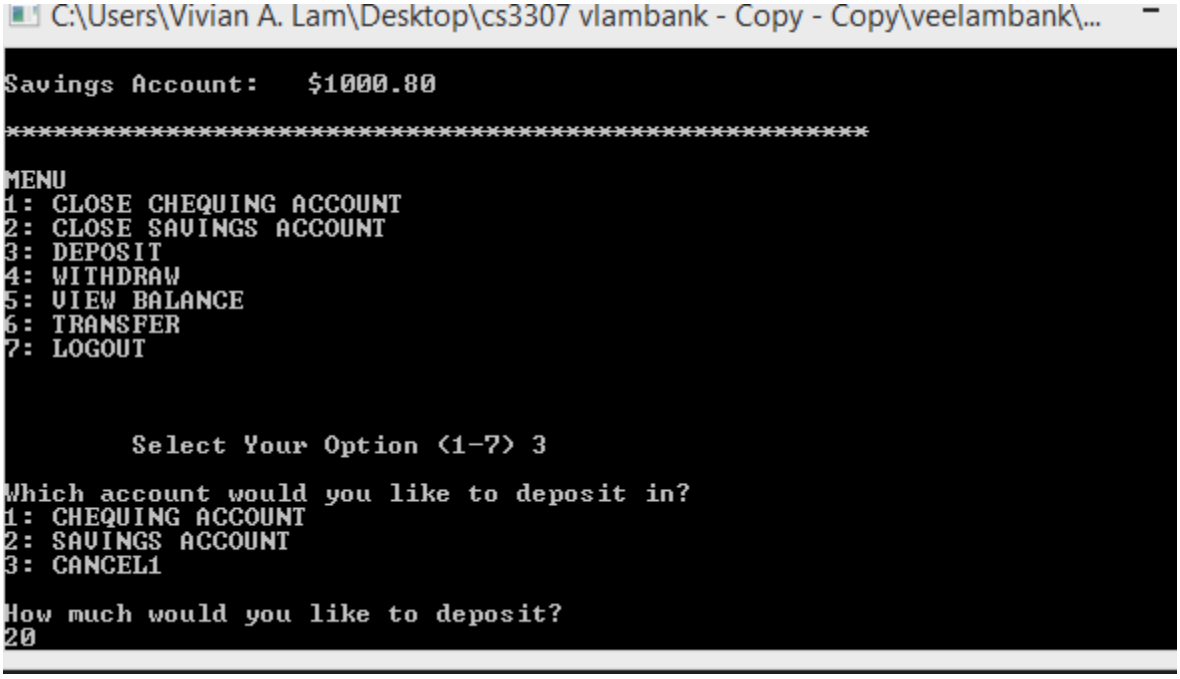
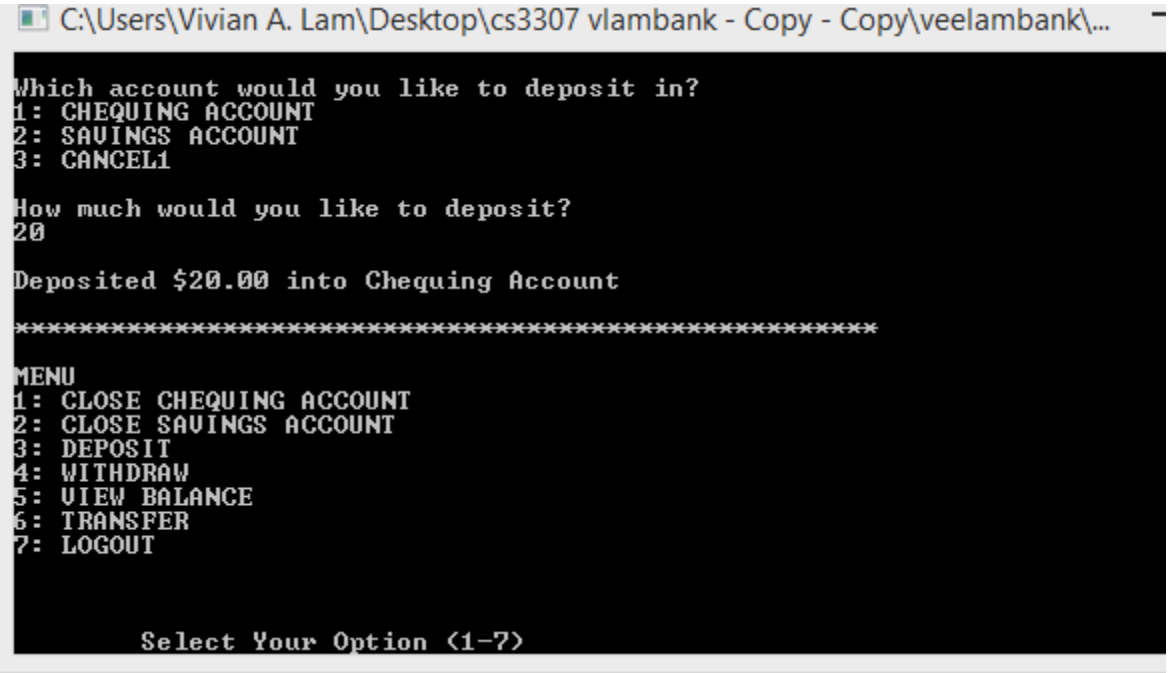
1: CLOSE CHEQUING ACCOUNT
2: CLOSE SAVINGS ACCOUNT
3: DEPOSIT
4: WITHDRAW
5: VIEW BALANCE
6: TRANSFER
7: LOGOUT
Select Your Option (1-7) 3
Which account would you like to deposit in?
1: CHEQUING ACCOUNT
2: SAVINGS ACCOUNT
3: CANCEL1

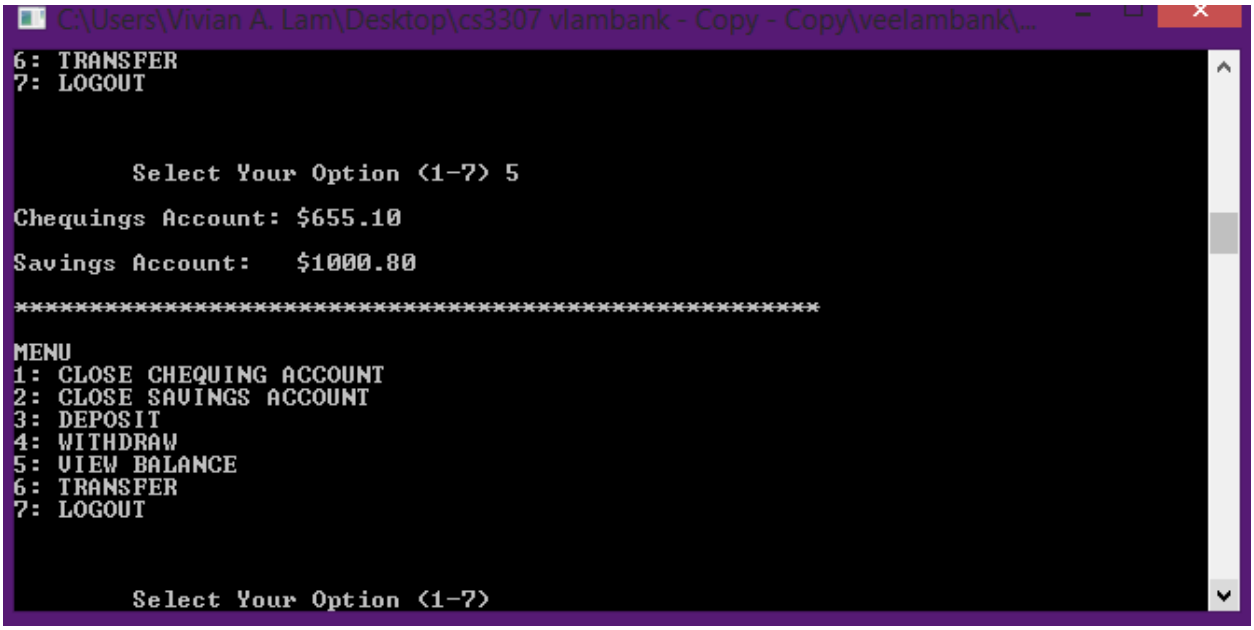




System deposits the funds.

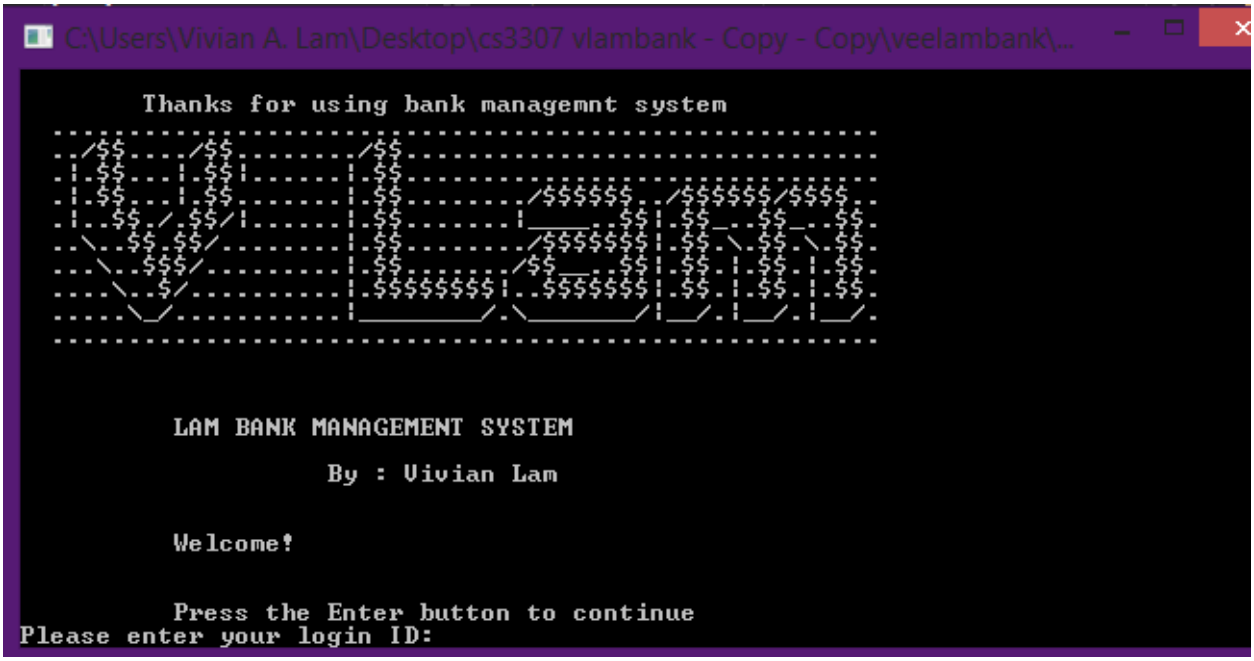


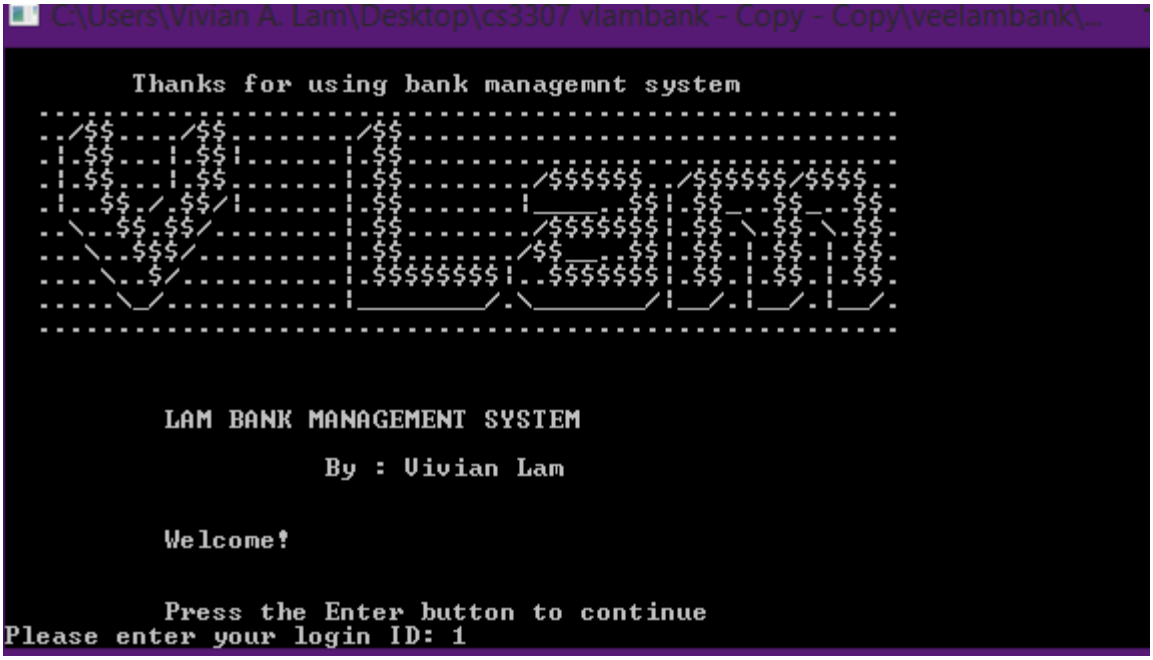
System displays the resultant balance. (select VIEW BALANCE from the menu)



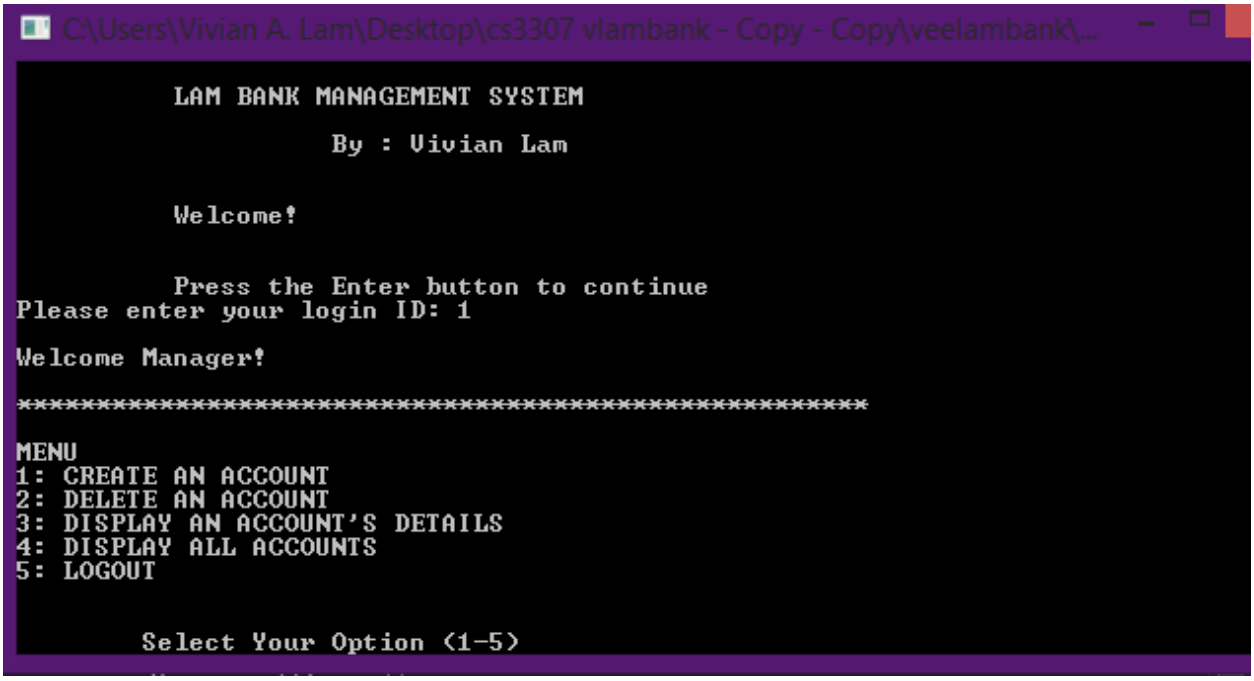
2. Manager creates an account

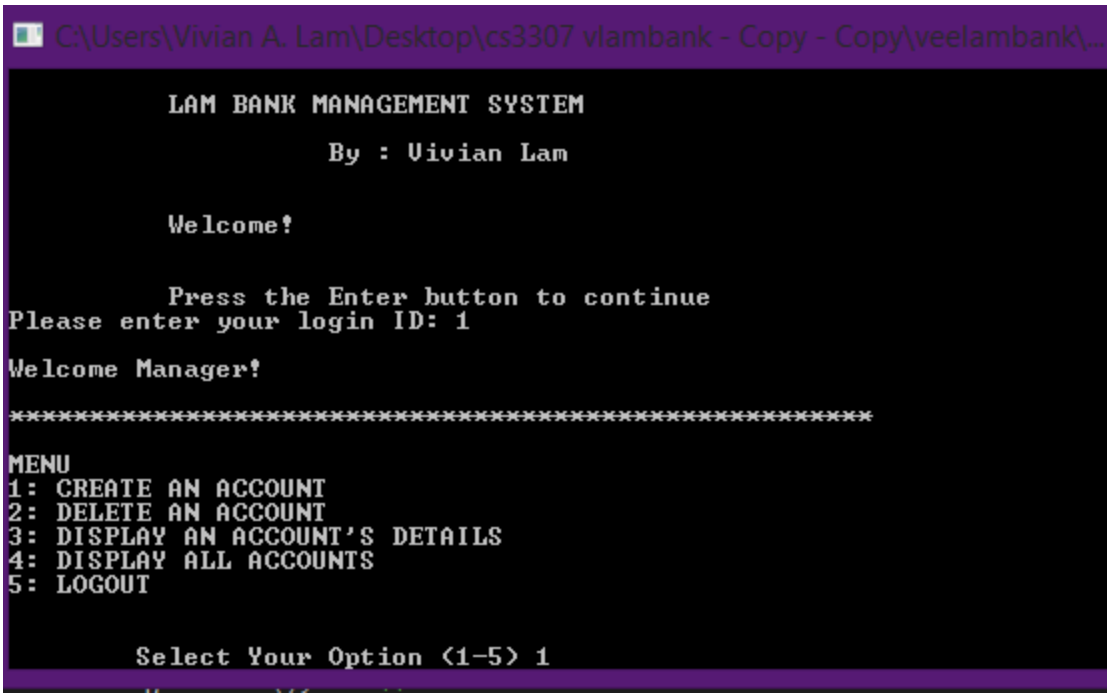
Manager logins





Manager selects create an account





Enter in details: first and last name (in this example: Jonathan; Joestar. The account number is auto generated)

```
**********************************************************

MENU
1: CREATE AN ACCOUNT
2: DELETE AN ACCOUNT
3: DISPLAY AN ACCOUNT'S DETAILS
4: DISPLAY ALL ACCOUNTS
5: LOGOUT


        Select Your Option (1-5) 1
Please enter the first name of the new Customer.
To cancel, enter 0.
Jonathan
Please enter the last name of the new Customer.
To cancel, enter 0.
Joestar
Account #12346 for user Jonathan Joestar was successfully created.

**********************************************************
```

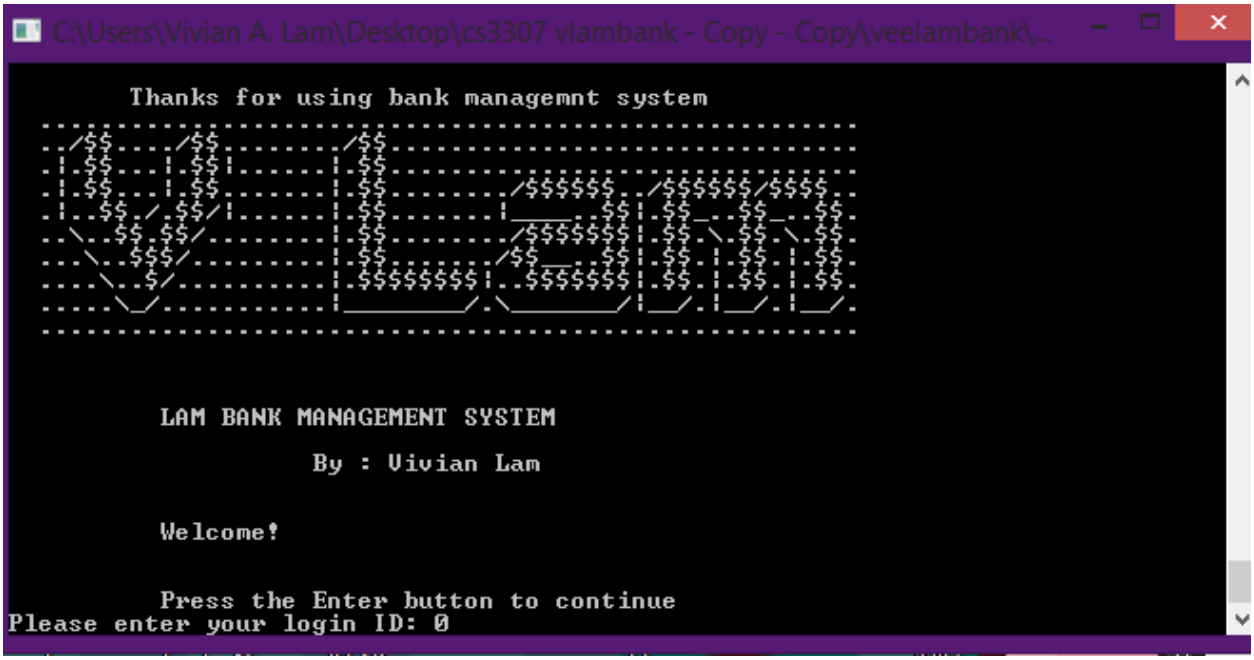
System creates a new account

System displays the new account data (select option 3 from main menu and then enter in the right account number. Below I have accidentally entered a non-existant account number, followed by the correct account number)

```
MENU
1: CREATE AN ACCOUNT
2: DELETE AN ACCOUNT
3: DISPLAY AN ACCOUNT'S DETAILS
4: DISPLAY ALL ACCOUNTS
5: LOGOUT


        Select Your Option (1-5) 3
Please enter an account to view.
To cancel, enter 0.
123456
Account 123456 could not be found.
Please enter an account to view.
To cancel, enter 0.
12346
**********************************************
Account Number:      12346
Name:                Joestar, Jonathan
Savings Account:     $0.00
Chequing Account:    $0.00
Dept:                $0.00
**********************************************
```

3. Maintenance operator turns on execution trace and views the traced files

Maintenance operator logs in



Selects execution trace to be on (select option 1 from main menu, then select 1 again to turn it on)

```
Welcome Maintenaner!

************---What would you like to do?---************
1: TURN EXECUTION TRACE ON/OFF
2: PRINT EXECUTION TRACE
3: CLEAR EXECUTION TRACE LOG
4: LOGOUT


        Select Your Option (1-4) 1
Execution tracing is OFF. Do you want to switch it ON?
1: Yes
2: No
1
Execution tracing is ON.
```

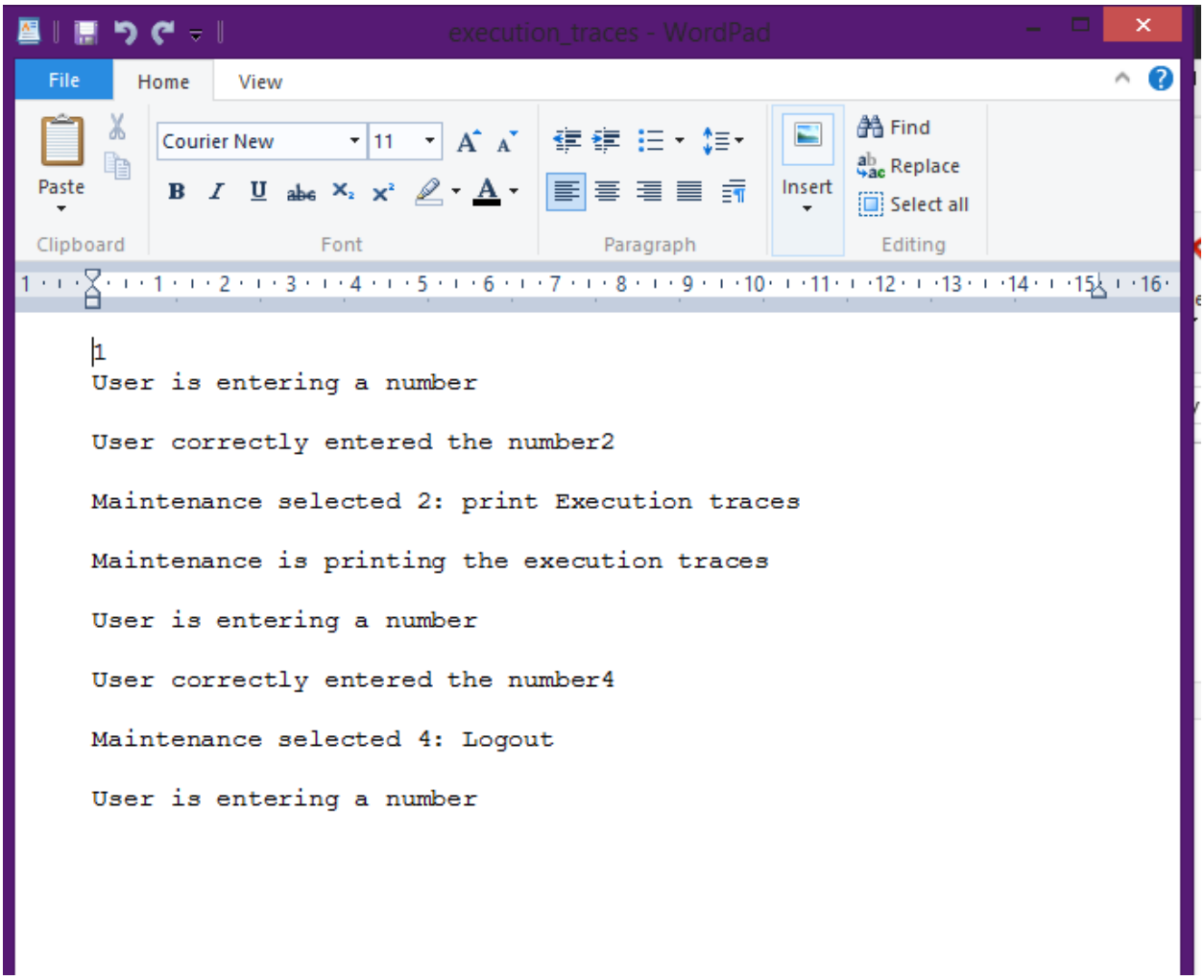
Print out execution trace (option 2 from main menu)

```
C:\Users\Vivian A. Lam\Desktop\cs3307 vlambank - Copy - Copy\veelambank\...

Welcome Maintenaner!

************---What would you like to do?---************
1: TURN EXECUTION TRACE ON/OFF
2: PRINT EXECUTION TRACE
3: CLEAR EXECUTION TRACE LOG
4: LOGOUT


        Select Your Option (1-4) 1
Execution tracing is OFF. Do you want to switch it ON?
1: Yes
2: No
1
Execution tracing is ON.

************---What would you like to do?---************
1: TURN EXECUTION TRACE ON/OFF
2: PRINT EXECUTION TRACE
3: CLEAR EXECUTION TRACE LOG
4: LOGOUT


        Select Your Option (1-4) 2
```

Note that it also shows on screen

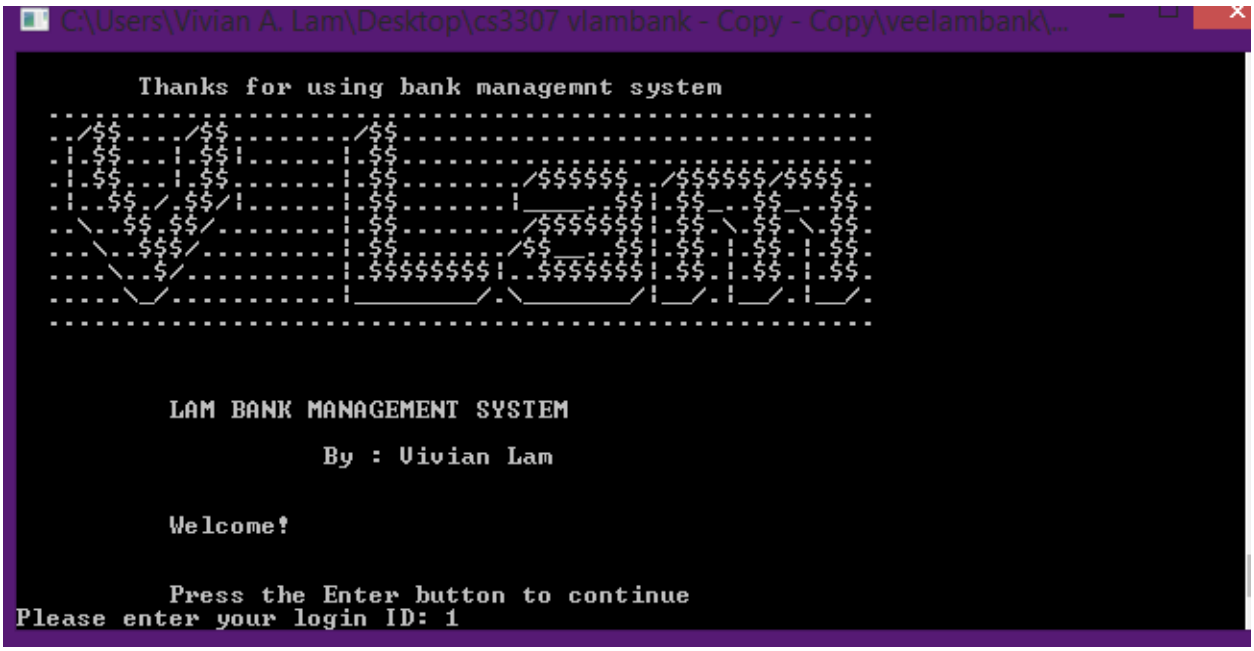
```
C:\Users\Vivian A. Lam\Desktop\cs3307 vlambank - Copy - Copy\veelambank\...

************---What would you like to do?---************
1: TURN EXECUTION TRACE ON/OFF
2: PRINT EXECUTION TRACE
3: CLEAR EXECUTION TRACE LOG
4: LOGOUT


        Select Your Option (1-4) 2
User is entering a number

User correctly entered the number2

Maintenance selected 2: print Execution traces

Maintenance is printing the execution traces
```

View the .txt file (note that it will only show the trace for this scenario because that's when execution trace was turned on)

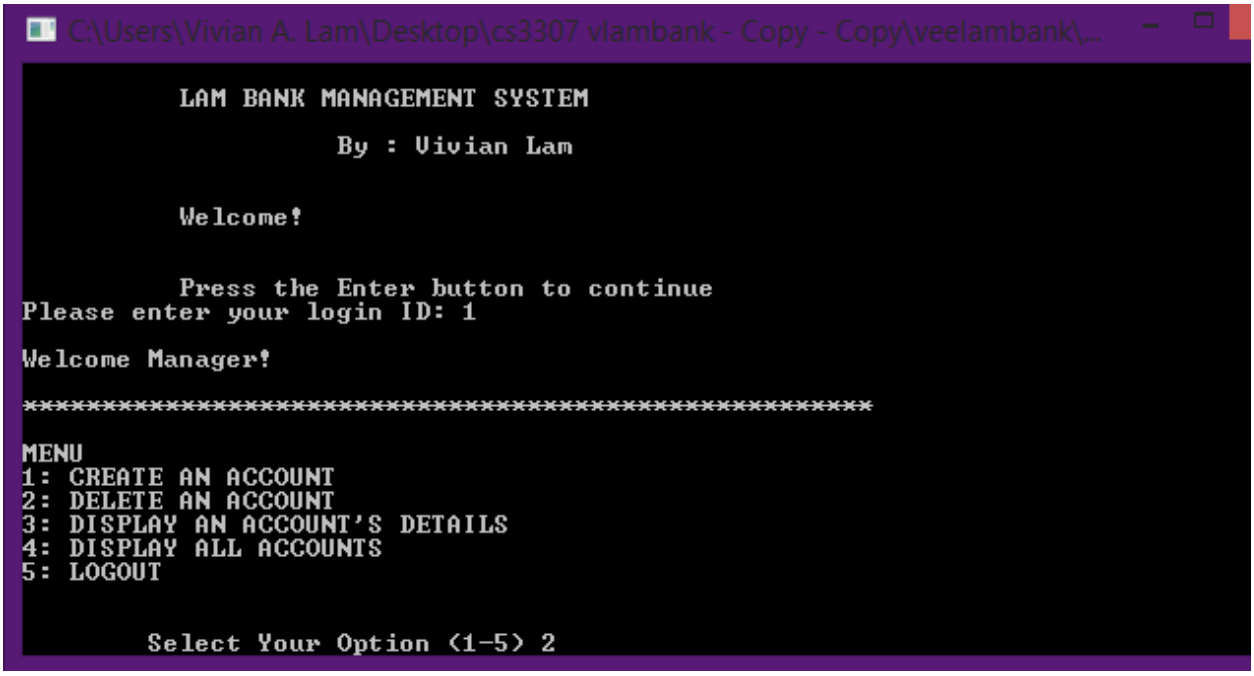


4. Manager deletes an account

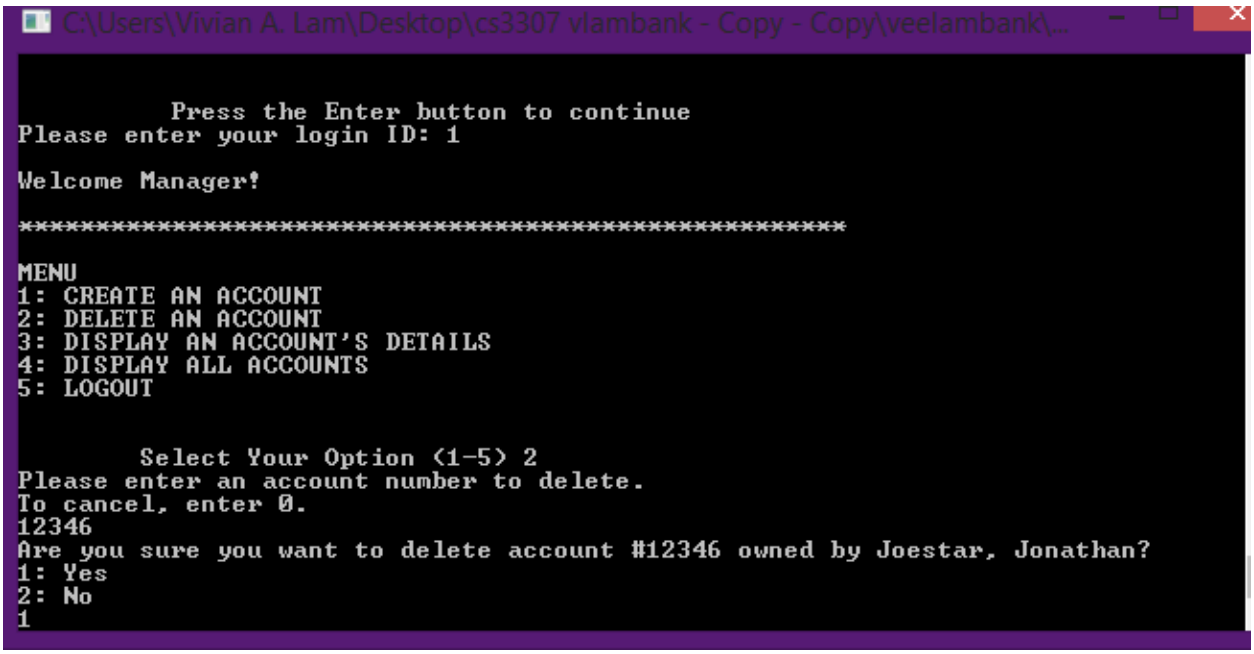
Manager logs in



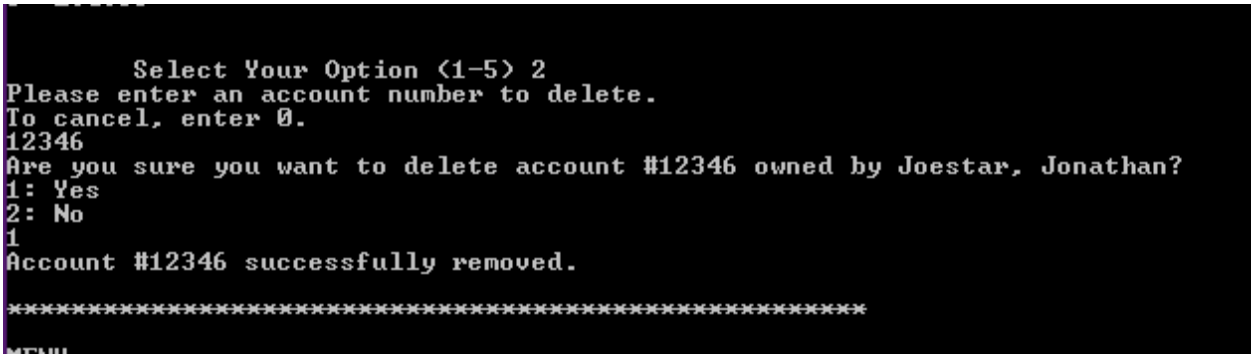
Manager selects delete an account



Enters in the account to be deleted (and enters 1 to confirm)



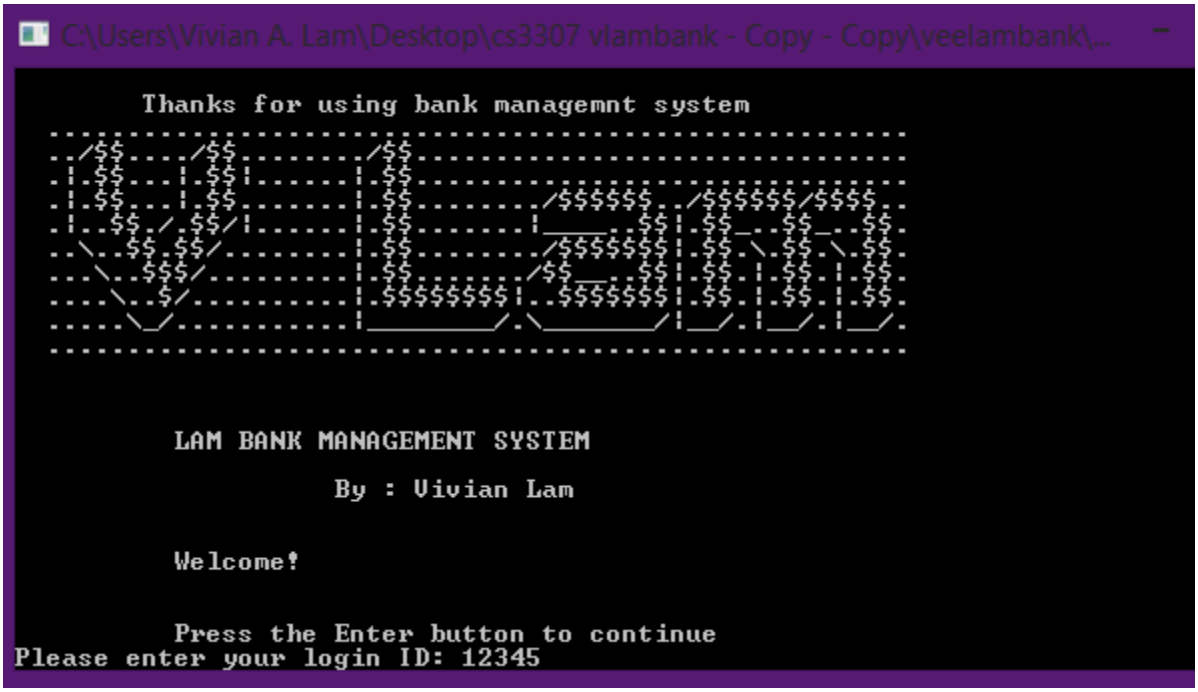
System deletes the account



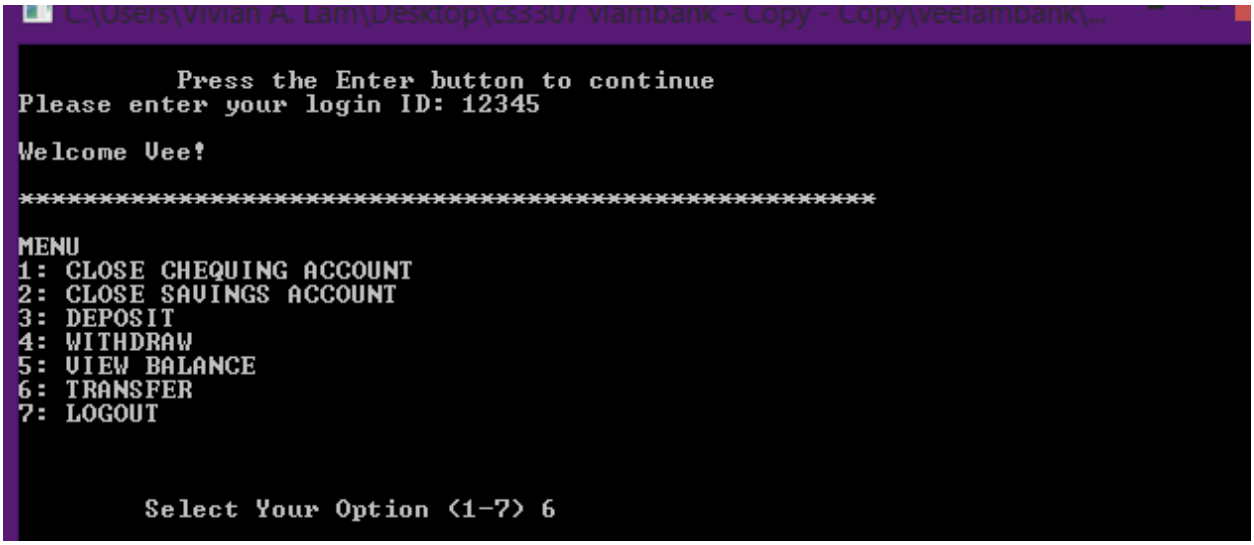
System shows that the account no longer exists

5. Customer transfers funds

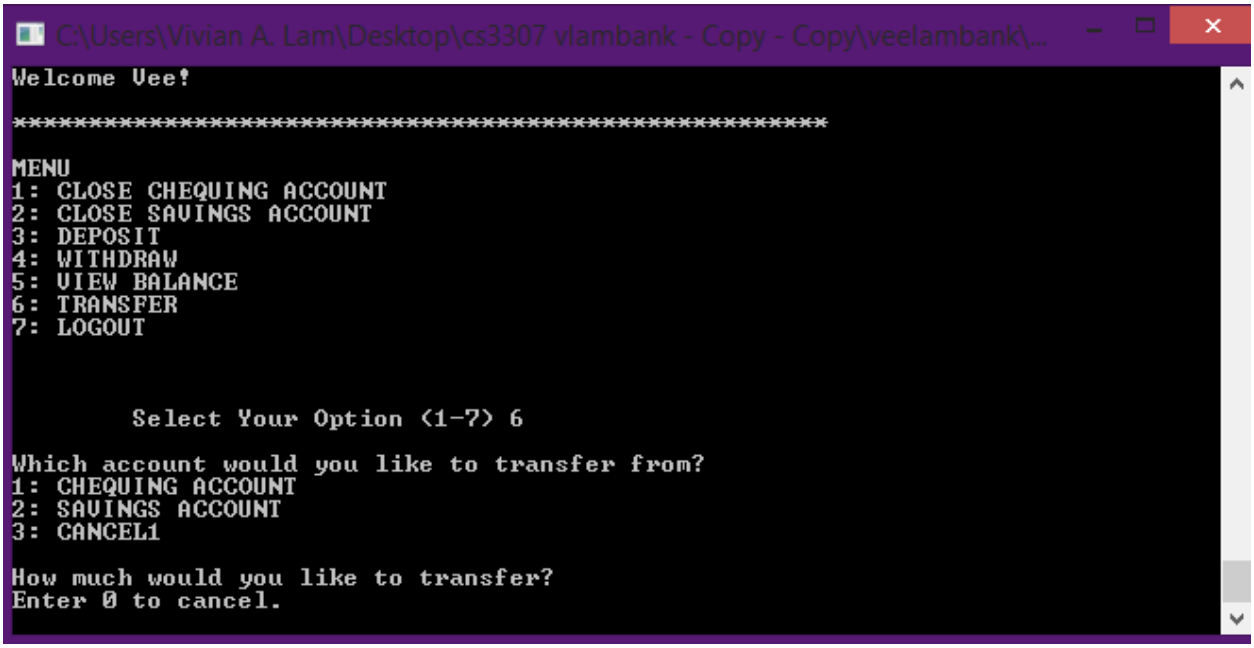
Customer logs in



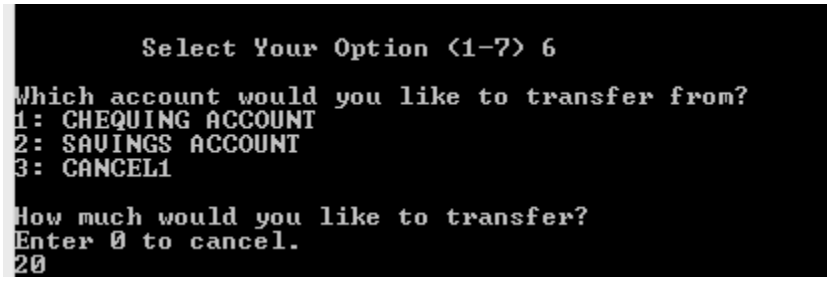
Customer selects transfer funds



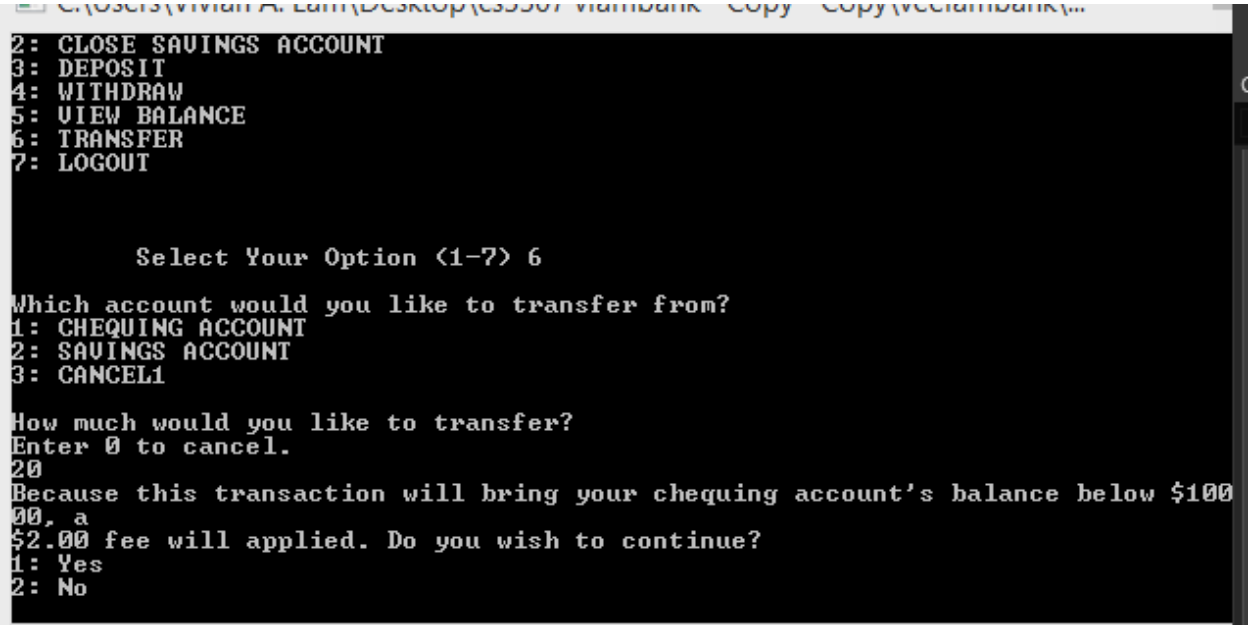
Customer selects which account to transfer from



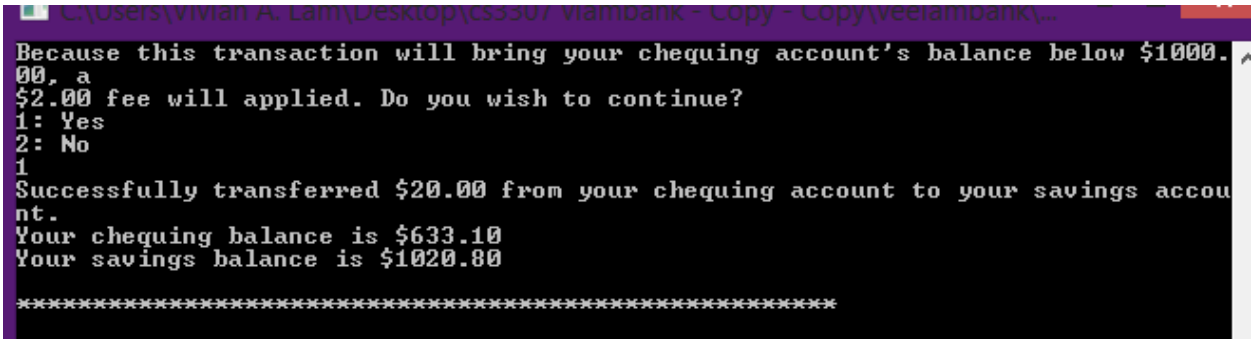
Customer selects amount



System transfer funds and applies warning if appropriate



System displays the new account data



Deliverable 5: Implementation of the enhanced requirements

Implemented login by having the program read text files (ones for customers and ones for manager/maintenance staff). If the ID numbered entered does not exist in any of the text files, the system will detect it as an invalid login. If the number does exist in the system, then it will be read and the corresponding customer and their details will be loaded. Customers is a vector array and each attribute of them is written to the file, accessed by a pointer. Sstream and iostream make this possible

Deliverable 6: What I learned

- Header files help keep the program neat. I should use them more.
- Pointers can reference anything, from a data structure to a variable etc.
- Function declaration helps the compiler and program know what types to accept, especially if the actual function is defined somewhere else later.
- The double colon "::" before a function ensures that resolution occurs from the global namespace instead of local namespace.
- I already knew about function prototypes from C, so I got more practice using them.
- C++ syntax