CS3307 - Assignment 1
Group 5: Tyler Laporte, Michelle Stakenborg

Deliverable 1:
Project Requirements by Role

Manager(s):
- id0: Login to program with a secure id/password and display manager functions (User ID: manager
  PIN: 1111)
- id1: View a list of all clientele
- id2: Display all account information of a client
- id3: Display all account information of all clientele
- id4: Display total bank funds
- id5: Open a chequing or savings account for a client
- id6: Close a chequing or savings account for a client

Maintenance Person(s):
- id7: Login to maintenance system with a secure id/password displaying maintenance options (User ID:
  maintenance   PIN: 1111)
- id8: Turn on/off execution trace
- id9: When execution trace is on, dump the traces into a file (named trace.txt)

Customer(s):
- id10: Sign up and sign in
- id11: Open a account (Chequing or Savings)
- id12: Close an account (Chequing or Savings - cannot close both as a user needs one account to be a
  client at the bank)
- id13: Add a new Account to current portfolio (Chequing or Savings)
- id14: Deposit funds
- id15: Withdraw funds (including $2 surcharge from chequing when applicable)
- id16: Transfer funds between accounts (Chequing and Savings)
- id17: Transfer funds to another user's account
- id18: Display account balance
- id19: Display transaction history

Deliverable 2:

- id17: Transfer funds to another user's account - I'm not sure if this was a base requirement or not, I
  understood the transfer requirement as "A user can transfer money from one of his accounts to the
  other (Chequing to savings or savings to chequing)". If this was meant to be a requirement, please
  ignore it being listed in this section.
- id19: Display transaction history

Deliverable 3:
In source file.

Deliverable 4:

Scenario 1:
- The user signs up and opens a chequing account with an initial balance of $1250
- The user attempts to withdraw $251 from the chequing account and is told a surcharge of $2 needs to be paid
- The user accepts the surcharge and withdraws the money
- The user then deposits $500 into the chequing account
- The user logs out

```
Welcome, enter:

 0 to sign in
 1 to sign up
 q to quit

 1

Enter the user ID for your new account: tlaport4

Enter the 4 character pin for your new account: 1111

To finish creating your new account, you must open either a chequing or savings
account
Are you opening a chequing or savings account?

 Enter:
 0 for Chequing
 1 for Savings
 x to Cancel

 0

Enter the initial balance for the account:

 1250

Account successfully opened. Thank you!


Account with user ID tlaport4 was successfully created.
You are now logged in as tlaport4.

Enter:
 0 to open a chequing or savings account
 1 to close an account
 2 to check balance
 3 to deposit money
 4 to withdraw money
 5 to transfer funds
 6 to display transaction history
 x to logout

 4

Enter:
0 to withdraw from your chequing account
1 to withdraw from your savings account
x to cancel

 0

How much would you like to withdraw today?

251

Your balance after withdraw will be less than 1000 and subject to a $2.00 charge

Press Y to continue or any other key to cancel request: Y/N?
 y
Transaction successful. Thank you!


Your chequing account balance is now: $997
```

```
Enter:
 0 to open a chequing or savings account
 1 to close an account
 2 to check balance
 3 to deposit money
 4 to withdraw money
 5 to transfer funds
 6 to display transaction history
 x to logout

 3

Enter:
0 to deposit to your chequing account
1 to deposit to your savings account
x to cancel

 0


How much would you like to deposit today?
500
Deposit transaction successful. Thank you!


Your chequing account balance is now: $1497

Enter:
 0 to open a chequing or savings account
 1 to close an account
 2 to check balance
 3 to deposit money
 4 to withdraw money
 5 to transfer funds
 6 to display transaction history
 x to logout

 x
Welcome, enter:

 0 to sign in
 1 to sign up
 q to quit
```

Scenario 2:
- The user signs in and checks the balance of his/her accounts
- The user opens a savings account with an initial balance of $25000
- The user transfers $5000 from his/her savings account to his/her chequing account
- The user displays the transaction history of his/her accounts
- The user logs out

```
Welcome, enter:

 0 to sign in
 1 to sign up
 q to quit

 0

Enter your user ID: tlaport4

Enter your pin or x to cancle: 1111

You are now logged in as tlaport4.

Enter:
 0 to open a chequing or savings account
 1 to close an account
 2 to check balance
 3 to deposit money
 4 to withdraw money
 5 to transfer funds
 6 to display transaction history
 x to logout

 2

Your chequing account balance is : $1501

Enter:
 0 to open a chequing or savings account
 1 to close an account
 2 to check balance
 3 to deposit money
 4 to withdraw money
 5 to transfer funds
 6 to display transaction history
 x to logout

 0
Are you opening a chequing or savings account?

 Enter:
 0 for Chequing
 1 for Savings
 x to Cancel

 1

Enter the initial balance for the account:

 25000

Account successfully opened. Thank you!

Enter:
 0 to open a chequing or savings account
 1 to close an account
 2 to check balance
 3 to deposit money
 4 to withdraw money
 5 to transfer funds
 6 to display transaction history
 x to logout

 5

Enter:
0 to transfer from your chequing account to your savings account
1 to transfer from your savings account to your chequing account
2 to transfer from your chequing account to another user's account
3 to transfer from your savings account to another user's account
x to cancel

 1

How much would you like to transfer?
5000
Transaction successful. Thank you!


Your chequing account balance is : $6501
Your savings account balance is : $20000
```

```
Enter:
 0 to open a chequing or savings account
 1 to close an account
 2 to check balance
 3 to deposit money
 4 to withdraw money
 5 to transfer funds
 6 to display transaction history
 x to logout

 6

Transaction history for chequing account:

Withdraw of $249.000000. Current balance: $1001.000000
Deposit of $500.000000. Current balance: $1501.000000
Deposit of $5000.000000. Current balance: $6501.000000

Transaction history for savings account:

Withdraw of $5000.000000. Current balance: $20000.000000
Enter:
 0 to open a chequing or savings account
 1 to close an account
 2 to check balance
 3 to deposit money
 4 to withdraw money
 5 to transfer funds
 6 to display transaction history
 x to logout

 x
```

Scenario 3:
- The user signs in and attempts to close his/her savings account, but it still has money in it so it doesn't get closed.
- The user checks his/her balances.
- The user withdraws half of his/her savings account money and transfers the other half to a different user.
- The user then closes his/her savings account.
- The user logs out

```
Enter your pin or x to cancle: 1111

You are now logged in as mstakenb.

Enter:
 0 to open a chequing or savings account
 1 to close an account
 2 to check balance
 3 to deposit money
 4 to withdraw money
 5 to transfer funds
 6 to display transaction history
 x to logout

 1

Enter:
0 to close your chequing account
1 to close your savings account
x to cancel

 1

Could not close savings account because it still has money in it.

Enter:
 0 to open a chequing or savings account
 1 to close an account
 2 to check balance
 3 to deposit money
 4 to withdraw money
 5 to transfer funds
 6 to display transaction history
 x to logout

 2

Your chequing account balance is : $10000
Your savings account balance is : $10000

Enter:
 0 to open a chequing or savings account
 1 to close an account
 2 to check balance
 3 to deposit money
 4 to withdraw money
 5 to transfer funds
 6 to display transaction history
 x to logout

 4

Enter:
0 to withdraw from your chequing account
1 to withdraw from your savings account
x to cancel

 1

How much would you like to withdraw today?
5000
Transaction successful. Thank you!


Your savings account balance is now: $5000
```

```
Enter:
0 to transfer from your chequing account to your savings account
1 to transfer from your savings account to your chequing account
2 to transfer from your chequing account to another user's account
3 to transfer from your savings account to another user's account
x to cancel

 3

Enter the user ID you wish to transfer money to:
tlaport4

Enter:
0 to transfer to their chequing account
1 to transfer to their savings account
x to cancel

 0

How much would you like to transfer?
5000
Transaction successful. Thank you!


Your chequing account balance is : $10000
Your savings account balance is : $0

Enter:
 0 to open a chequing or savings account
 1 to close an account
 2 to check balance
 3 to deposit money
 4 to withdraw money
 5 to transfer funds
 6 to display transaction history
 x to logout

 1

Enter:
0 to close your chequing account
1 to close your savings account
x to cancel

 1

Savings account successfully closed

Enter:
 0 to open a chequing or savings account
 1 to close an account
 2 to check balance
 3 to deposit money
 4 to withdraw money
 5 to transfer funds
 6 to display transaction history
 x to logout

 x
```

Scenario 4:
- The user logs in as the manager
- The manager views a list of all clientele
- The manager views the information of all clientele
- The manager views total bank funds
- The manager logs out

```
Welcome, enter:

 0 to sign in
 1 to sign up
 q to quit

 0

Enter your user ID: manager

Enter your pin or x to cancle: 1111

You are now logged in as the bank manager.

Enter:
0 to view the list of clients
1 to view a client's information
2 to view the information of all clientele
3 to view total bank funds
4 to open an account
5 to close an account
x to logout

 0

List of clients:
 tlaport4
 mstakenb

Enter:
0 to view the list of clients
1 to view a client's information
2 to view the information of all clientele
3 to view total bank funds
4 to open an account
5 to close an account
x to logout

 2
Clientele information:

ID: tlaport4          Pin: 1111 Chequing: $11501 Savings: $20000
ID: mstakenb          Pin: 1111 Chequing: $10000

Enter:
0 to view the list of clients
1 to view a client's information
2 to view the information of all clientele
3 to view total bank funds
4 to open an account
5 to close an account
x to logout

 3

Total money in chequing: $21501
Total money in savings: $20000
Total money: $41501

Enter:
0 to view the list of clients
1 to view a client's information
2 to view the information of all clientele
3 to view total bank funds
4 to open an account
5 to close an account
x to logout

 x
Welcome, enter:

 0 to sign in
 1 to sign up
 q to quit
```

Scenario 5:

- The user logs in as the maintenance person
- The maintenance person turns the tracer on
- The maintenance person comes back later and turns the tracer off
- The maintenance person logs out

```
Welcome, enter:

 0 to sign in
 1 to sign up
 q to quit

 0

Enter your user ID: maintenance

Enter your pin or x to cancle: 1111

You are now logged in as the maintenance man.

Enter:
0 to turn on the execution tracer
1 to turn off the execution tracer
x to logout

 0

Execution tracer has been turned on

Enter:
0 to turn on the execution tracer
1 to turn off the execution tracer
x to logout
```

```
Enter:
0 to turn on the execution tracer
1 to turn off the execution tracer
x to logout

 1

Execution tracer has been turned off

Enter:
0 to turn on the execution tracer
1 to turn off the execution tracer
x to logout

 x

Welcome, enter:

 0 to sign in
 1 to sign up
 q to quit
```
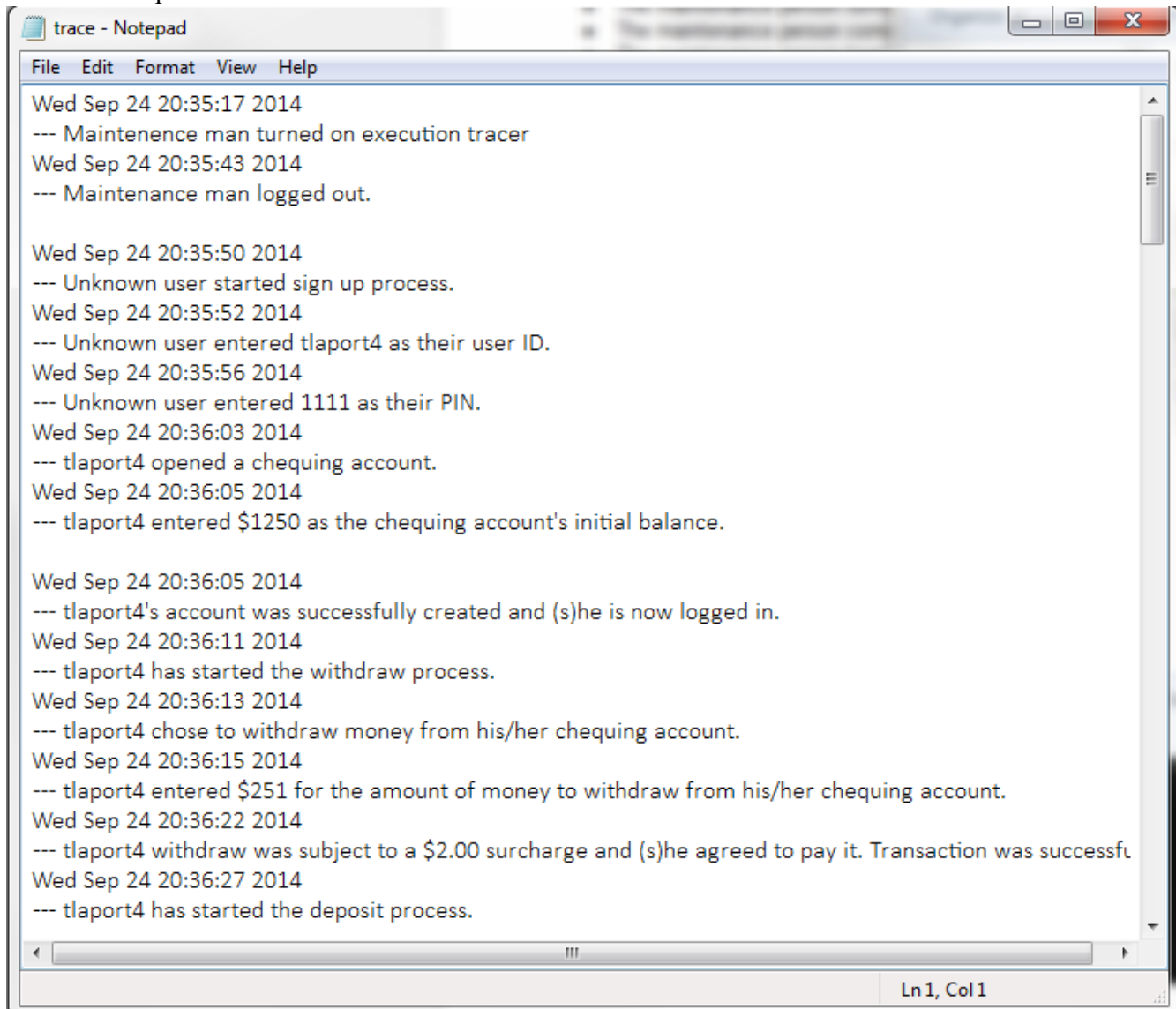
Here is a sample of the execution trace:

```
trace - Notepad

File   Edit   Format   View   Help

Wed Sep 24 20:35:17 2014
--- Maintenence man turned on execution tracer
Wed Sep 24 20:35:43 2014
--- Maintenance man logged out.

Wed Sep 24 20:35:50 2014
--- Unknown user started sign up process.
Wed Sep 24 20:35:52 2014
--- Unknown user entered tlaport4 as their user ID.
Wed Sep 24 20:35:56 2014
--- Unknown user entered 1111 as their PIN.
Wed Sep 24 20:36:03 2014
--- tlaport4 opened a chequing account.
Wed Sep 24 20:36:05 2014
--- tlaport4 entered $1250 as the chequing account's initial balance.

Wed Sep 24 20:36:05 2014
--- tlaport4's account was successfully created and (s)he is now logged in.
Wed Sep 24 20:36:11 2014
--- tlaport4 has started the withdraw process.
Wed Sep 24 20:36:13 2014
--- tlaport4 chose to withdraw money from his/her chequing account.
Wed Sep 24 20:36:15 2014
--- tlaport4 entered $251 for the amount of money to withdraw from his/her chequing account.
Wed Sep 24 20:36:22 2014
--- tlaport4 withdraw was subject to a $2.00 surcharge and (s)he agreed to pay it. Transaction was successfu
Wed Sep 24 20:36:27 2014
--- tlaport4 has started the deposit process.

                                          Ln 1, Col 1
```

Deliverable 5:

What we learned...

This project allowed us to become more familiar with the C++ language and the programming environment. We were also able to practice using the various programming tools such as makefile, github, g++ compiler and other such features.

What we would do differently...

We would have liked to spend more time properly designing both the higher-level architecture and the lower-level detailed designs of the program. We also would have liked to spend more time making the code more concise and readable. There are many more features available to banking systems as well as fail-safe efforts to avoid glitches and errors in the program. Verifying valid inputs, testing code with several obscure inputs and use-age would have also been beneficial to the overall outcome of the program.