# CSCI 1411: Fundamentals of Computing Lab 14

Due Date: December 8, 2023

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#### Goals:

- Classes
- Objects
- List and List Functions
- Menu driven application

### **Development Environment: IDLE**

#### **Deliverables:**

- 1. This completed document with required screen shots.
- 2. Your completed Python code (Transaction.py and BankAccount.py).
- 3. Data file (bank\_account\_data.txt)

### How to take a **screen shot**:

- For a Windows 10: Use Snipping Tool to copy and press CTRL + V to paste screen shot.
- For Mac: Press Shift + Command (ℍ) + 4 to copy and press Command (ℍ) + V to paste screen shot.

#### **Bank Account Register**

In this lab we will create an application to keep track of our bank transactions. This will be menu driven application which will display a menu of tasks and user will be able to select the task that they want to perform. User will have following choices:

- 1. Add a new transaction.
- 2. Get current balance.
- 3. List all transactions.

There are two files included with this labs. These files are as follows:

- 1. Transaction.py file contains the Python code for Transaction class. It has three instance fields: date (for storing date of transaction), transaction\_type (for storing type of transaction) and amount (for storing amount of transaction). There are four valid types of transactions: deposit, withdraw, bank charge, and interest (interest paid to you by the bank).
- 2. BankAccount.py contains the main function, which displays the main menu and has helper functions.

Start with opening each of the above file and review the code before you start writing the required code. You do not have to add any code to the Transaction.py file. You will write all your code in BankAccount.py file.

Load the BankAccount.py file (click Run -> Run Module in the BankAccount.py window) and run the program by typing main() in shell. It will display the following menu.

### Welcome to Bank Account Application

\_\_\_\_\_

A - Add a new transaction

B - Calculate current balance

C - Display list of transactions

Q - Quit

\_\_\_\_\_

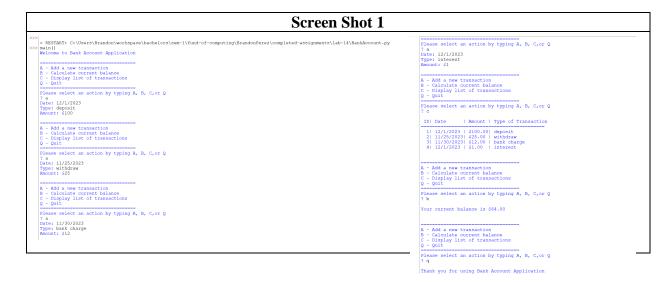
Please select an action by typing A, B, C, or Q

It will wait for you to select an action. Note that the menu is in a while loop so it will redisplay the menu when it is done with the selected action. You can quit the application by selecting quit (type q or Q). main function uses if-elif-else control structure and calls appropriate functions based on the selected action (A, B, C, or Q). Right now the only thing that the function will do is print the name of the function. Your task is to add code to each of the following functions to make them do their work:

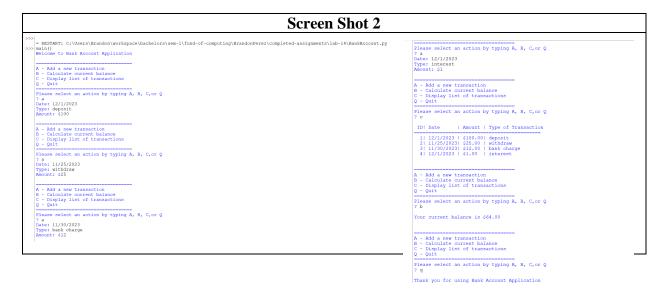
- display\_list (list\_of\_transactions) will display list of all transactions.
- add\_transaction (list\_of\_transactions) will let you add a new transaction to the list.
- calculate\_balance (list\_of\_transactions) will calculate the current balance and will display it on the screen

Read the comments in each of the functions before writing code for that function. Also review sample interaction (given at end of this lab handout) before you write the code for any of the functions. Write the code in the following order:

1. Write code for add\_transaction function and display\_list function. Once these two functions are completed run your program and test it by adding a new transaction and displaying the list on the screen to verify that new transaction was added correctly to the list of transactions. If it is working correctly then take a screen shot and paste it below.



2. Write the code for calculate\_balance and run your program to make sure that it calculates the balance correctly. If it is working correctly then take a screen shot and paste it below.



## **Sample Interaction**

## Sample I/O:

```
>>> main()
Welcome to Bank Account Application
A - Add a new transaction
B - Calculate current balance
C - Display list of transactions
O - Ouit
Please select an action by typing A, B, C, or Q
Enter date using the format yyyymmdd: 20231112
Enter transaction type: deposit
Enter transaction amount: 100
A - Add a new transaction
B - Calculate current balance
C - Display list of transactions
O - Ouit
_____
Please select an action by typing A, B, C, or Q
? c
Date
       Type
                      Amount
$
20231112 deposit
                           100.00
_____
End of the list
A - Add a new transaction
B - Calculate current balance
C - Display list of transactions
Q - Quit
Please select an action by typing A, B, C, or Q
?a
```

Enter date using the format yyyymmdd: 20231113

Enter transaction type: withdraw

Enter transaction amount: 25

\_\_\_\_\_

A - Add a new transaction

- B Calculate current balance
- C Display list of transactions
- Q Quit

\_\_\_\_\_

Please select an action by typing A, B, C, or Q ?c

List of Transactions

Date	Туре	Amount	t	
=======		========	======	
20231112	deposit	\$	100.00	
20231113	withdraw	\$	25.00	
========	:=========		======	

End of the list

### 

- A Add a new transaction
- B Calculate current balance
- C Display list of transactions
- O Ouit

\_\_\_\_\_

Please select an action by typing A, B, C, or Q ?a

Enter date using the format yyyymmdd: 20231101

Enter transaction type: bank charge

Enter transaction amount: 12

#### 

- A Add a new transaction
- B Calculate current balance
- C Display list of transactions
- Q Quit

Please select an action by typing A, B, C, or Q ?c

#### List of Transactions

Date	Type	Amount	
========		=======	======
20231112	deposit	\$	100.00
20231113	withdraw	\$	25.00
20231101	bank charge	\$	12.00
=======		========	=====

End of the list

### \_\_\_\_\_

- A Add a new transaction
- B Calculate current balance
- C Display list of transactions
- Q Quit

\_\_\_\_\_\_

Please select an action by typing A, B, C, or Q  $^{\circ}$ a

Enter date using the format yyyymmdd: 20231101

Enter transaction type: interest

Enter transaction amount: 1

#### \_\_\_\_\_

- A Add a new transaction
- B Calculate current balance
- C Display list of transactions
- Q Quit

Please select an action by typing A, B, C, or Q ?c

List of Transactions

Date	Type	Amount	
========			
20231112	deposit	\$	100.00
20231113	withdraw	\$	25.00
20231101	bank charge	\$	12.00
20231101	interest	\$	1.00

End of the list

- A Add a new transaction
- B Calculate current balance
- C Display list of transactions
- Q Quit

Please select an action by typing A, B, C, or Q ? b

Current balance is \$64.00

# **Rubric for Lab 14:**

Rubile for Lab 14.	
Criteria	Rating
Part 1: Screen shot 1	Screen shot included – 5 points
	No screen shot included – 0 points
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Part 1: Screen shot 2	Screen shot included – 5 points
	No screen shot included – 0 points
add_transaction method	Prompts for the required information – 5 points
	Does not prompt for the required information – 0 points
add_transaction method	Adds the new transction to list of transactions – 5 points
	Does not add the new transaction to the list of transactions – 0 points
display_list method	Displays the list of transactions in form of a table using f string – 20 points
	Displays the list of transactions in form of a table without using f string – 10 points
	Displays the list of transactions without using the table format – 5 points
	Does not display the list of transactions – 0 points
calculate_balance method	Calculates and displays the correct balance – 20 points
	Does not calculate the correct balance – 0 points
Total	60