

COURSE: 16:332:503:02 – PROGRAMMING FINANCE

PROJECT: ACCOUNT MANAGEMENT SYSTEM

Account Management System is a project wherein I have created a parent class called “account” and its two child “stockaccount” and “bankaccount” both the child classes have their different ways of execution and perform various other operations. The “bankaccount” child class performs operations such as View Account Balance, Deposit Money, Withdraw Money and Transaction History. The “stockaccount” child class performs operations such as Display price of stock, Display portfolio, Buy shares, Sell shares, Portfolio graph, View Transaction History.

The classes are named as:

Account: account();

Stock Account: stockaccount();

Bank Account: bankaccount();

In “stockaccount” class, various different implementation methods are used in every single functionality and every buy share or sell share transaction that is been done is being written in a separate “.txt” file called “stock_transaction_history.txt” file. All the operations are implemented using a switch case. The operations are as follows:

❖ Display price of stock:

In displaying price of stock, as we are provided with two different result.txt files such as “Result_1.txt” and “Result_2.txt”. I have used a random function which chooses between both the files and reads the stock price of the company symbol which the user gives as an Input. The output for this is displayed in a tabular format showing the Price per share of the respective company symbol.

❖ Display portfolio:

In displaying the portfolio, here what I have basically done is all the total shares that the user has with its company symbol, volume of shares i.e. number of shares, price of per share with respect to the company symbol and the calculated amount for the total number of shares is been displayed. This function displays the whole portfolio of the user in a tabular format with the data stored in it for all multiple transactions at any time done. Whenever the user sells some particular amount of shares from his portfolio, the tabular data which is displayed is refreshed again with the current portfolio of the user. As many times this procedure is been done, the tabular data gets refreshed.

❖ Buy shares:

While buying any shares for a company, the user is initially asked to input the company symbol which he/she wished to buy shares for after that the user will be the asked to input the number of shares as well as the maximum willing to pay for the shares. The random function implemented here will choose a file in which the company symbol has the stock price per share in it and will calculate the volume of share the user wishes to buy and will be display a successful transaction when all the test cases are being fulfilled by the user. The test cases which I have implemented here is that the user show have account balance more than the total valuation of the volume of shares the user wished the buy. Incase if the total balance in the account is less than the total valuation of shares then it displays as the transaction has failed because of low balance in the account. Every transaction that takes place will be implemented using the doubly linked list and will be the stored inside the “stock_transaction_history.txt”. Simultaneously while buying shares whatever amount of total valuation has been cut from the bank will be updated into the other .txt file called “balance_history.txt”.

❖ Sell shares:

While selling shares for a company, the user will be asked to input the company symbol which he/she wishes to sell shares, after that the user will be asked to input the number of shares as well as the minimum amount willing to pay for the shares. The random function implemented here will choose a file in which the company symbol has the stock price per share in it and will calculate for the volume of shares it will sold. While implementing sell shares, I have also considered various test cases such as when the volume of share given as an input as more than the user has, in such cases the transaction will be fail. If the share price is less than the amount user is willing to pay, then too the transaction will fail. All the sell shares transaction that are done are stored in the .txt file called “stock_transaction_history.txt”. Whenever a user performs sell share operation the amount will be added to balance and the incremented will be displayed in the “balance_history.txt”.

❖ View graph of the portfolio value:

While displaying the graph of portfolio value, I am basically summarizing this valuation with respect to the market. It shows percentage share of each held by the user.

❖ View Transaction history:

In view transaction history, I have displayed all the buy shares and sell shares transactions that were performed in a tabular format. In this table, I have displayed company symbol, volume of shares, price per share, total value of all the shares as well the time at which the transactions took place.

BANK ACCOUNT:

In “bankaccount” class, I have used function to set the default balance of the account i.e. \$10000. The balance is set in a text file, which will always be read while performing any calculation. All the operations of the “deposit money” and “withdraw money” will be stored in a .txt file called “balance_history.txt”. The operations implemented are as follows:

- ❖ View Account Balance:

In the view account balance class, the default account balance is set to \$10000. Whenever the user deposits money the value will be incremented and whenever the user withdraws money the value will be decremented with respect to amount of transaction that is conducted.

- ❖ Deposit Money:

In deposit money, the user is asked for money that has to be deposited into the bank account. The amount entered will be added into the balance as well as the whole amount will be reflected into the .txt file called “balance_history.txt”. I have also used an additional test case wherein the user cannot deposit more than \$25000 into the account at a single stretch. For this test case, I have used and if-else loop to perform the operation.

- ❖ Withdraw Money:

In withdraw money, the user is asked for that money that has to be withdraw from the bank account. The amount entered will be deducted from the balance as well as the whole amount will be reflected into the .txt file called “balance_history.txt”. In this I have also used a test case, wherein the user can withdraw money more than which is available in his bank account. In such cases, the transaction will be failed directly.

- ❖ Print out history:

In print out history, I have displayed the whole transaction summary in a tabular format which shows when deposit operation or withdraw operation are done and are displayed.

RESULT:

STOCK ACCOUNT RESULT:

```
(base) partrthhkharkar@Partrthhs-Air FinalProject_Parth Kharkar % ./a.out

WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT

ENTER THE CHOICE NUMBER TO BE EXECUTED!
1
OPTION 1: DISPLAY THE PRICE FOR A STOCK SYMBOL
OPTION 2: DISPLAY THE CURRENT PORTFOLIO
OPTION 3: BUY SHARES
OPTION 4: SELL SHARES
OPTION 5: VIEW A GRAPH FOR THE PORTFOLIO VALUE
OPTION 6: VIEW TRANSACTION HISTORY
OPTION 7: RETURN TO CURRENT MENU

3
Performing Purchase of Shares of Latest Stock -
PLEASE ENTER THE COMPANY SYMBOL YOU WISH TO PURCHASE THE SHARE FOR:
GOOG
ENTER THE NUMBER OF SHARES YOU WISH TO PURCHASE FOR THE COMPANY: 2
ENTER THE MAXIMUM AMOUNT WILLING TO PAY: 1200
10000
8862.07
YOU HAVE PURCHASED SHARES OF TOTAL $1137.93
GOOG
WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT

ENTER THE CHOICE NUMBER TO BE EXECUTED!
1
OPTION 1: DISPLAY THE PRICE FOR A STOCK SYMBOL
OPTION 2: DISPLAY THE CURRENT PORTFOLIO
OPTION 3: BUY SHARES
OPTION 4: SELL SHARES
OPTION 5: VIEW A GRAPH FOR THE PORTFOLIO VALUE
OPTION 6: VIEW TRANSACTION HISTORY
OPTION 7: RETURN TO CURRENT MENU

3
Performing Purchase of Shares of Latest Stock -
PLEASE ENTER THE COMPANY SYMBOL YOU WISH TO PURCHASE THE SHARE FOR:
AMD
ENTER THE NUMBER OF SHARES YOU WISH TO PURCHASE FOR THE COMPANY: 15
ENTER THE MAXIMUM AMOUNT WILLING TO PAY: 100
8862.07
8772.82
YOU HAVE PURCHASED SHARES OF TOTAL $89.25

WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT

ENTER THE CHOICE NUMBER TO BE EXECUTED!
1
OPTION 1: DISPLAY THE PRICE FOR A STOCK SYMBOL
OPTION 2: DISPLAY THE CURRENT PORTFOLIO
OPTION 3: BUY SHARES
```

WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!

OPTION 1: STOCK ACCOUNT

OPTION 2: BANK ACCOUNT

OPTION 3: EXIT

ENTER THE CHOICE NUMBER TO BE EXECUTED!

1

OPTION 1: DISPLAY THE PRICE FOR A STOCK SYMBOL

OPTION 2: DISPLAY THE CURRENT PORTFOLIO

OPTION 3: BUY SHARES

OPTION 4: SELL SHARES

OPTION 5: VIEW A GRAPH FOR THE PORTFOLIO VALUE

OPTION 6: VIEW TRANSACTION HISTORY

OPTION 7: RETURN TO CURRENT MENU

3

Performing Purchase of Shares of Latest Stock -

PLEASE ENTER THE COMPANY SYMBOL YOU WISH TO PURCHASE THE SHARE FOR:
MSFT

ENTER THE NUMBER OF SHARES YOU WISH TO PURCHASE FOR THE COMPANY: 10

ENTER THE MAXIMUM AMOUNT WILLING TO PAY: 310

8772.82

8466.62

YOU HAVE PURCHASED SHARES OF TOTAL \$306.2

WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!

OPTION 1: STOCK ACCOUNT

OPTION 2: BANK ACCOUNT

OPTION 3: EXIT

ENTER THE CHOICE NUMBER TO BE EXECUTED!

1

OPTION 1: DISPLAY THE PRICE FOR A STOCK SYMBOL

OPTION 2: DISPLAY THE CURRENT PORTFOLIO

OPTION 3: BUY SHARES

OPTION 4: SELL SHARES

OPTION 5: VIEW A GRAPH FOR THE PORTFOLIO VALUE

OPTION 6: VIEW TRANSACTION HISTORY

OPTION 7: RETURN TO CURRENT MENU

4

Performing Sale of Shares of Latest Stock -

PLEASE ENTER THE COMPANY SYMBOL YOU WISH TO SELL THE SHARE FOR:
GOOG

ENTER THE NUMBER OF SHARES YOU WISH TO SELL FOR THE COMPANY: 1

ENTER THE MINIMUM AMOUNT WILLING TO PAY: 550

YOU HAVE SOLD SHARES OF TOTAL: \$569.964

GOOG

WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!

OPTION 1: STOCK ACCOUNT

OPTION 2: BANK ACCOUNT

OPTION 3: EXIT

ENTER THE CHOICE NUMBER TO BE EXECUTED!

1

OPTION 1: DISPLAY THE PRICE FOR A STOCK SYMBOL

OPTION 2: DISPLAY THE CURRENT PORTFOLIO

OPTION 3: BUY SHARES

OPTION 4: SELL SHARES

OPTION 5: VIEW A GRAPH FOR THE PORTFOLIO VALUE

OPTION 6: VIEW TRANSACTION HISTORY

OPTION 7: RETURN TO CURRENT MENU

4

```
ENTER THE CHOICE NUMBER TO BE EXECUTED!
1
OPTION 1: DISPLAY THE PRICE FOR A STOCK SYMBOL
OPTION 2: DISPLAY THE CURRENT PORTFOLIO
OPTION 3: BUY SHARES
OPTION 4: SELL SHARES
OPTION 5: VIEW A GRAPH FOR THE PORTFOLIO VALUE
OPTION 6: VIEW TRANSACTION HISTORY
OPTION 7: RETURN TO CURRENT MENU

4
Performing Sale of Shares of Latest Stock -
PLEASE ENTER THE COMPANY SYMBOL YOU WISH TO SELL THE SHARE FOR:
AMD
ENTER THE NUMBER OF SHARES YOU WISH TO SELL FOR THE COMPANY: 5
ENTER THE MINIMUM AMOUNT WILLING TO PAY: 20
YOU HAVE SOLD SHARES OF TOTAL: $34.75
AMD
WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT

ENTER THE CHOICE NUMBER TO BE EXECUTED!
1
OPTION 1: DISPLAY THE PRICE FOR A STOCK SYMBOL
OPTION 2: DISPLAY THE CURRENT PORTFOLIO
OPTION 3: BUY SHARES
OPTION 4: SELL SHARES
OPTION 5: VIEW A GRAPH FOR THE PORTFOLIO VALUE
OPTION 6: VIEW TRANSACTION HISTORY
OPTION 7: RETURN TO CURRENT MENU

2
Printing Portfolio:

ComSym Num Price TotalValue
-----
GOOG 1 568.964 568.964
MSFT 10 30.62 306.2
AMD 10 5.95 59.5
Total valuation:
934.664
WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT

ENTER THE CHOICE NUMBER TO BE EXECUTED!
1
OPTION 1: DISPLAY THE PRICE FOR A STOCK SYMBOL
OPTION 2: DISPLAY THE CURRENT PORTFOLIO
OPTION 3: BUY SHARES
OPTION 4: SELL SHARES
OPTION 5: VIEW A GRAPH FOR THE PORTFOLIO VALUE
OPTION 6: VIEW TRANSACTION HISTORY
OPTION 7: RETURN TO CURRENT MENU
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```
YOU HAVE SOLD SHARES OF TOTAL: $34.75
AMD
WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT

ENTER THE CHOICE NUMBER TO BE EXECUTED!
1
OPTION 1: DISPLAY THE PRICE FOR A STOCK SYMBOL
OPTION 2: DISPLAY THE CURRENT PORTFOLIO
OPTION 3: BUY SHARES
OPTION 4: SELL SHARES
OPTION 5: VIEW A GRAPH FOR THE PORTFOLIO VALUE
OPTION 6: VIEW TRANSACTION HISTORY
OPTION 7: RETURN TO CURRENT MENU

2
Printing Portfolio:

ComSym Num Price TotalValue
-----
GOOG 1 568.964 568.964
MSFT 10 30.62 306.2
AMD 10 5.95 59.5
Total valuation:
934.664
WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT

ENTER THE CHOICE NUMBER TO BE EXECUTED!
1
OPTION 1: DISPLAY THE PRICE FOR A STOCK SYMBOL
OPTION 2: DISPLAY THE CURRENT PORTFOLIO
OPTION 3: BUY SHARES
OPTION 4: SELL SHARES
OPTION 5: VIEW A GRAPH FOR THE PORTFOLIO VALUE
OPTION 6: VIEW TRANSACTION HISTORY
OPTION 7: RETURN TO CURRENT MENU

6
Printing Total Transaction History -
EVENT OF TRANSACTION COMPANY SYMBOL VOLUME OF SHARES COST PER SHARE TOTAL VALUATION TIME OF TRANSACTION
BUY GOOG 2022 1200 $568.964 $1137.93 FriDec 23
22:24:01 BUY AMD 2022 100 $5.95 $89.25 FriDec 23
22:24:07 BUY MSFT 2022 310 $30.62 $306.2 FriDec 23
22:24:15 SELL GOOG 2022 568 $569.964 $569.964 FriDec 23
22:24:25 SELL AMD 2022 20 $6.95 $34.75 FriDec 23
22:24:43
WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT

ENTER THE CHOICE NUMBER TO BE EXECUTED!
1
```


BANK ACCOUNT:

```
WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT

ENTER THE CHOICE NUMBER TO BE EXECUTED!
2
OPTION 1: VIEW ACCOUNT BALANCE
OPTION 2: DEPOSIT MONEY
OPTION 3: WITHDRAW MONEY
OPTION 4: PRINT OUT HISTORY
```

```
2
Performing Deposit Operation -
Enter the Amount You Would Like to Deposit in Your Account:
1000
Total Amount Available in Your Bank Account: 10070.3
WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT
```

```
ENTER THE CHOICE NUMBER TO BE EXECUTED!
2
OPTION 1: VIEW ACCOUNT BALANCE
OPTION 2: DEPOSIT MONEY
OPTION 3: WITHDRAW MONEY
OPTION 4: PRINT OUT HISTORY
```

```
2000

WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT
```

```
ENTER THE CHOICE NUMBER TO BE EXECUTED!
2
OPTION 1: VIEW ACCOUNT BALANCE
OPTION 2: DEPOSIT MONEY
OPTION 3: WITHDRAW MONEY
OPTION 4: PRINT OUT HISTORY
```

```
3
Performing Withdrawal Operation -
Enter the Amount You Would Like to Withdraw From Your Account:
1500
Total Amount Available in Your Bank Account: 8570.3
WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT
```

```
ENTER THE CHOICE NUMBER TO BE EXECUTED!
2
```

```
WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT
```

```
ENTER THE CHOICE NUMBER TO BE EXECUTED!
2
OPTION 1: VIEW ACCOUNT BALANCE
OPTION 2: DEPOSIT MONEY
OPTION 3: WITHDRAW MONEY
OPTION 4: PRINT OUT HISTORY
```

```
4
Printing Total Transaction History -
EVENT          Amount          Date          Balance
MONEY_DEPOSITED      1000      12/23/2022      9070.33
MONEY_WITHDRAWN      1500      12/23/2022      10070.3
```

```
WELCOME TO THE ACCOUNT MANAGEMENT SYSTEM!
OPTION 1: STOCK ACCOUNT
OPTION 2: BANK ACCOUNT
OPTION 3: EXIT
```

```
ENTER THE CHOICE NUMBER TO BE EXECUTED!
```