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CS 3331 – Advanced Object-Oriented Programming – Fall 2020

Instructor Dr. Mejia

Assignment PA2

I confirm that the work of this assignment is completely my own. By turning in this assignment, I declare that I did not receive unauthorized assistance. Moreover, all deliverables including, but not limited to the source code, lab report and output files were written and produced by me alone.

1. Program Explanation

The main objective of this assignment was updating our last lab to make a bank more complex. It now has different accounts and more interactions between the classes. It overall did the same actions such as depositing, withdrawing, transferring, inquiring, and paying accounts. Overall, the way I solved the methods were the same adding and subtracting the amounts the only difficult things was the relationship between the classes. I did use inheritance so that the methods and attributes would be transferred. Then I did break the problem into smaller such as focusing on the accounts first then the customer then the bank functions.

2. What did I learn?

I learned about the limits of inheritance and abstract classes. That in java that a method can't inherit from two classes. That when classes get related to each other it can get very confusing, so you have to keep track of everything. My solution can be improved in the pay and transfer methods I feel like they are too repetitive, and I could have made it more compact. For those functions I could have directed asked which accounts they want to use. Though that would introduce more user error and error handling. It took me I would say three straight days to finish this lab.

3. Solution Design

In this program I made two abstract class as stated in the instructions. I then had the three accounts class inherit from the abstract account class to gain all the attributes and methods. The customer class then inherited from the person abstract class. The customer class also took the information for accounts and created checking saving and credit accounts. This enabled the customer to have all the information of person and the accounts. Then for the bank functions it was a lot of switch cases so the user can choose what to do. Then if statements for error handling. The main aspect was finding which account to add to the balance and which account to subtract from the balance. My approach was just focus on creating the classes then figure out the bank functions. The data structure I used was a hash table as the key function made it easy to get directly to the correct customer. I did make a few assumptions such as the account information was given in the correct order.

4. Testing

Did I break my program and use that as a way to improve it?

I tested by just running my program to see if it gave the expected values. Then I did use Junit testing as required. I used white box testing as I created the program and knew about what it

contained. I believe that solution is okay not the best it can be but not horrible it can do what its asks, but it can be improved. This is shown through the testing I tested all that is required. Though to improved I should try more edge cases and ways the user can misuse the program. The test cases include trying each function for simple input. Then trying to input negative values, putting account number that don't exist, also wrong input values.

5. Test results

Bank Manager

```
Please type your account number
1
A Inquire account by name
B Inquire account by type/number
C Print All
D LogOut
Mickey
Sorry that isnt an option
A Inquire account by name
B Inquire account by type/number
C Print All
D LogOut
1
What is the first name of the account you would like to inquire about?
Mickey
Mickey Mouse "November 22 1943" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0001 Credit: account number 3000 account balance $-1549.33 Saving: account number 1017 account balance $803.62
A Inquire account by name
B Inquire account by type/number
C Print All
D LogOut
1
Ursula Mermaid "January 9 1937" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0019 Checking: account number 1018 account balance $855.38 Saving: account number 1019 account balance $855.38
Jafar Aladdin "December 11 1995" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0018 Checking: account number 1017 account balance $803.62 Saving: account number 1017 account balance $803.62
Buzz Lightyear "June 5 2003" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0017 Checking: account number 1016 account balance $1969.33 Saving: account number 1016 account balance $1969.33
Woody Disney "July 2 1990" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0016 Checking: account number 1015 account balance $1486.52 Saving: account number 1015 account balance $1486.52
Peter Pan "November 11 1973" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0015 Checking: account number 1014 account balance $1817.07 Saving: account number 1014 account balance $1817.07
Aurora Disney "January 21 1937" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0014 Checking: account number 1013 account balance $1396.14 Saving: account number 1013 account balance $1396.14
Mufassa Disney "July 29 1965" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0013 Checking: account number 1012 account balance $1096.88 Saving: account number 1012 account balance $1096.88
Simba Disney "July 25 1934" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0012 Checking: account number 1011 account balance $1096.88 Saving: account number 1011 account balance $1096.88
Aladdin Disney "November 9 1992" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0011 Checking: account number 1010 account balance $997.05 Saving: account number 1010 account balance $997.05
Jasmine Disney "September 20 1932" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0010 Checking: account number 1009 account balance $1745.05 Saving: account number 1009 account balance $1745.05
Lilo Disney "September 21 1969" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0035 Checking: account number 1034 account balance $1844.34 Saving: account number 1034 account balance $1844.34
Donald Duck "September 5 1983" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0002 Checking: account number 1001 account balance $1688.89 Saving: account number 1001 account balance $1688.89
Mulan Disney "July 6 1966" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0034 Checking: account number 1033 account balance $1096.88 Saving: account number 1033 account balance $1096.88
Mickey Mouse "November 22 1943" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0001 Checking: account number 1000 account balance $960.94 Saving: account number 1000 account balance $960.94
Hercules Disney "February 14 1966" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0033 Checking: account number 1032 account balance $668.7 Saving: account number 1032 account balance $668.7
Quasimodo Disney "November 4 1989" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0032 Checking: account number 1031 account balance $1206.59 Saving: account number 1031 account balance $1206.59
Prince Eric "September 28 1953" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0031 Checking: account number 1030 account balance $114.21 Saving: account number 1030 account balance $114.21
Pinocchio Disney "July 3 1941" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0030 Checking: account number 1029 account balance $1713.08 Saving: account number 1029 account balance $1713.08
Evil Queen "February 18 1981" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0029 Checking: account number 1028 account balance $955.49 Saving: account number 1028 account balance $955.49
Kaa Disney "November 10 1961" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0028 Checking: account number 1027 account balance $1084.34 Saving: account number 1027 account balance $1084.34
Captain Hook "December 6 1971" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0027 Checking: account number 1026 account balance $997.05 Saving: account number 1026 account balance $997.05
Shere Khan "September 15 1962" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0026 Checking: account number 1025 account balance $1972.54 Saving: account number 1025 account balance $1972.54
Gaston Disney "July 11 1943" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0025 Checking: account number 1024 account balance $1181.1 Saving: account number 1024 account balance $1181.1
Simba King "March 13 2018" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0024 Checking: account number 1023 account balance $1624.91 Saving: account number 1023 account balance $1624.91
Scar Lion "June 18 2017" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0023 Checking: account number 1022 account balance $344.68 Saving: account number 1022 account balance $344.68
Cruella De Vil "September 22 1996" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0022 Checking: account number 1021 account balance $966.03 Saving: account number 1021 account balance $966.03
Belle Disney "September 6 1928" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0021 Checking: account number 1020 account balance $403.9 Saving: account number 1020 account balance $403.9
Beast Disney "August 29 1969" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0020 Checking: account number 1019 account balance $682.79 Saving: account number 1019 account balance $682.79
A Inquire account by name
B Inquire account by type/number
C Print All
D LogOut
1
What is the id Number
000-00-0006
Goofy Disney "July 2 1933" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0004 Credit: account number 3003 account balance $-752.22 Saving: account number 3003 account balance $-752.22
A Inquire account by name
B Inquire account by type/number
C Print All
D LogOut
```

Customer

Please type your account number

000-00-0006

Please choose an action:

1: Inquire Balance

2: Make Payment

3: Deposit

4: Withdraw

5: Transfer money

6: Log out

1

Chip made an inquire about their balances

Chip Disney "January 12 1947" "1313 Disneyland Dr Anaheim CA 92802" (714) 781-4636 id number 000-00-0006 Credit: account number 3005 account balance \$-1492.58 Saving: account number 2005 account balance \$3286.32 Checking: account number 1005 account balance \$1060.3

Please choose an action:

1: Inquire Balance

2: Make Payment

3: Deposit

4: Withdraw

5: Transfer money

6: Log out

2

Please enter account number of person you are paying

000-00-0007

Please enter ammount

50

Would you like to pay:

a Checking to checking

b Checking to savings

c Checking to credit

d savings to checking

e saving to saving

f saving to credit

g credit to checking

h credit to saving

i credit to credit

a

Chip paid Dale \$50.0

Chip new checking amount is \$1010.3 Dale new checking amount is \$351.9

Sorry that isnt an option

Please choose an action:

1: Inquire Balance

2: Make Payment

3: Deposit

4: Withdraw

5: Transfer money

6: Log out

3

please enter amount

60

3.a checking

3.b savings

3.c credit

3.a

Chip deposited \$60.0 into checking new balance is \$1070.3

Please choose an action:

1: Inquire Balance

2: Make Payment

3: Deposit

4: Withdraw

5: Transfer money

6: Log out

4

please enter amount

1

4.a checking

4.b savings

4.c credit

4.c

Chip withdrew \$1.0 from credit new balance is \$-1492.58

Please choose an action:

1: Inquire Balance

2: Make Payment

3: Deposit

4: Withdraw

5: Transfer money

6: Log out

5

please enter amount

60

please choose an option

1. Checking to credit

2. Checking to saving

3. Credit to Checking

4. Credit to Saving

5. Saving to Checking

6. Saving to credit

5

Chip transferred \$ 60.0 to saving to checking. New balances :3226.32 1130.3

Please choose an action:

1: Inquire Balance

2: Make Payment

3: Deposit

4: Withdraw

5: Transfer money

6: Log out

6