

Lab20: Account Classes

Part 1. Account class should have

name

an automatically created account number starting with 10000000

balance

String transactions[] that logs all deposits/withdraws. Ex, {"deposit 100", "withdraw 20", "deposit 10"}. This array needs to be resized each transaction, and if there are no transactions, it should be null.

toString() that returns for example "Name: John Doe, Acct: 10001000, Balance: \$1.23"

void deposit(double amt)

double withdraw(double amt)

Part 2. SavingsAccount should in addition have

an interest rate to earn interest

applyInterest() that applies 1 month of interest to the account ($+ \text{interestRate} / 12$)

toString() that returns for example "Name: John Doe, Savings Acct: 10001000, Balance: \$1.23, Interest: 2.01%"

Part 3. CreditCardAccount should in addition have

an interest rate to pay interest

a description of Visa, Mastercard, Amex

chargeInterest() that charges 1 month of interest to the account ($- \text{interestRate} / 12$)

charge() and pay() methods. balance should usually be negative, and charge makes it more negative, pay makes it more positive. The balance can go above 0.

toString() that returns for example "Name: John Doe, Visa Acct: 10001000, Balance: \$1.23, Interest: 20.01%"

Part 4. CheckingAccount should in addition have

toString() that returns for example "Name: John Doe, Checking Acct: 10001000, Balance: \$1.23"

Part 5. Create a menu for an online banking system:

1. Create new account

Lab20: Account Classes

2. Deposit/Pay
3. Withdraw/Charge
4. Print report of all accounts
5. Print all transactions
9. Exit

Deposit/Pay and Withdraw/Charge can ask for the account number first.

Print report of all accounts should just print out their toString()'s.

Print all transactions should look something like this:

Account 10000000:

Deposit 10

Withdraw 5

Account 10000001

Deposit 100

Account 10000002

Account 10000003

Charge 50

Pay 20

Part 6. Create a 6th menu option to advance time an inputted number of months and applies the appropriate interest. Applying 6 months of interest should apply 1 month of interest 6 times.

Part 7. Create a 7th menu option that deposits \$1, \$2, ... , \$20 into each account. Put 20 deposits in each account.

Task1. Create a SavingsAccount, CreditCardAccount, and CheckingAccount with whatever realistic information you want. Print report of all accounts. Make sure all menu options work properly.

Checklist of things to make sure of:

Lab20: Account Classes

1. You should not have a `setBalance()` method in Account class. We don't want to magically change balance to some value. Instead, use `deposit()` and `withdraw()` any time you want to change the balance.
2. Try not to write code twice. Some ways you can reuse your code:
 - super constructor
 - this constructor
 - `super.toString()`
 - create helper functions