Java Essentials Module 3 Assignment

Please use the jar file to test the program.

Command: java -jar Module3Assignment.jar

Notes:

* Only one instance of each account can exist concurrently (can be extended through the use of arrays)
* Accounts need to be created before using functions
* Account number of current account is 1
* Account number of SB account is 2
* Account class is abstract to prevent instantiation
* Child Account classes declared as final
* Method overriding has been implemented on the setAmount and withdraw functions
* Current account has minimum balance of -£400 defined as final
* SB account has minimum balance of £100 defined as final

AccountAdmin Class (contains main()):

**import** java.util.Scanner;

**public** **class** AccountAdmin {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Scanner serviceInput = **new** Scanner(System.***in***);

CurrentAccount currentAccount = **new** CurrentAccount();

SBAccount sbAccount = **new** SBAccount();

**for** (;;) {

System.***out***.println("Please select your service: ");

System.***out***.println("1: Open new account.");

System.***out***.println("2: Check balance.");

System.***out***.println("3: Deposit.");

System.***out***.println("4: Withdraw.");

**int** accountService = serviceInput.nextInt();

**int** accountSelection = 0;

serviceInput.nextLine();

**if** (accountService == 1) {

System.***out***.println("Please select your account: ");

System.***out***.println("1: Current account.");

System.***out***.println("2: SB balance.");

accountSelection = serviceInput.nextInt();

serviceInput.nextLine();

**if** (accountSelection == 1) {

AccountAdmin.*openNewCurrentAccount*(currentAccount);

} **else** **if** (accountSelection == 2) {

AccountAdmin.*openNewSBAccount*(sbAccount);

}

} **if** (accountService == 2) {

System.***out***.println("Please enter your account number. ");

**int** accountNumber = serviceInput.nextInt();

serviceInput.nextLine();

**if** (accountNumber == 1 && currentAccount.accountActive == **true**) {

**float** currentAmount = currentAccount.getAmount();

System.***out***.println("You have £" + currentAmount + ".");

} **else** **if** (accountNumber == 2 && sbAccount.accountActive == **true**) {

**float** sbAmount = sbAccount.getAmount();

System.***out***.println("You have £" + sbAmount + ".");

} **else** {

System.***out***.println("That account is not recognised. ");

}

} **else** **if** (accountService == 3) {

System.***out***.println("Please enter your account number. ");

**int** accountNumber = serviceInput.nextInt();

serviceInput.nextLine();

**if** (accountNumber == 1 && currentAccount.accountActive == **true**) {

**float** currentAmount = currentAccount.getAmount();

System.***out***.println("You have £" + currentAmount + "." + "");

System.***out***.println("Please enter the amount you would like to deposit.");

**float** depositAmount = serviceInput.nextFloat();

serviceInput.nextLine();

currentAccount.deposit(depositAmount);

currentAmount = currentAccount.getAmount();

System.***out***.println("You have £" + currentAmount + "." + "");

} **else** **if** (accountNumber == 2 && sbAccount.accountActive == **true**) {

**float** sbAmount = sbAccount.getAmount();

System.***out***.println("You have £" + sbAmount + "." + "");

System.***out***.println("Please enter the amount you would like to deposit.");

**float** depositAmount = serviceInput.nextFloat();

serviceInput.nextLine();

sbAccount.deposit(depositAmount);

sbAmount = sbAccount.getAmount();

System.***out***.println("You have £" + sbAmount + "." + "");

} **else** {

System.***out***.println("That account is not recognised. ");

}

} **else** **if** (accountService == 4) {

System.***out***.println("Please enter your account number. ");

**int** accountNumber = serviceInput.nextInt();

serviceInput.nextLine();

**if** (accountNumber == 1 && currentAccount.accountActive == **true**) {

**float** currentAmount = currentAccount.getAmount();

System.***out***.println("You have £" + currentAmount + " and can withdraw £" +(currentAmount - currentAccount.minBalance +"."));

System.***out***.println("Please enter the amount you would like to withdraw.");

**float** depositAmount = serviceInput.nextFloat();

serviceInput.nextLine();

currentAccount.withdraw(depositAmount);

currentAmount = currentAccount.getAmount();

System.***out***.println("You have £" + currentAmount + "." + "");

} **else** **if** (accountNumber == 2 && sbAccount.accountActive == **true**) {

**float** sbAmount = sbAccount.getAmount();

System.***out***.println("You have £" + sbAmount + " and can withdraw £" +(sbAmount - sbAccount.minBalance +"."));

System.***out***.println("Please enter the amount you would like to withdraw.");

**float** depositAmount = serviceInput.nextFloat();

serviceInput.nextLine();

sbAccount.withdraw(depositAmount);

sbAmount = sbAccount.getAmount();

System.***out***.println("You have £" + sbAmount + "." + "");

} **else** {

System.***out***.println("That account is not recognised. ");

}

}

System.***out***.println(" ");

System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* ");

System.***out***.println(" ");

}

}

**public** **static** **void** openNewCurrentAccount(CurrentAccount currentAccount) {

Scanner serviceInput = **new** Scanner(System.***in***);

System.***out***.println("Please enter your name: ");

String accountName = serviceInput.nextLine();

currentAccount.setName(accountName);

System.***out***.println("Please enter the account you want to deposit: ");

**float** amountInitial = serviceInput.nextFloat();

serviceInput.nextLine();

currentAccount.setAmount(amountInitial);

}

**public** **static** **void** openNewSBAccount(SBAccount sbAccount) {

Scanner serviceInput = **new** Scanner(System.***in***);

System.***out***.println("Please enter your name: ");

String accountName = serviceInput.nextLine();

sbAccount.setName(accountName);

System.***out***.println("Please enter the account you want to deposit: ");

**float** amountInitial = serviceInput.nextFloat();

serviceInput.nextLine();

sbAccount.setAmount(amountInitial);

}

}

# Account Class:

**public** **abstract** **class** Account {

**int** number;

String name;

**float** amount;

**boolean** accountActive = **false**;

**public** **void** activateAccount() {

accountActive = **false**;

}

**public** **boolean** checkAccountActive() {

**return** accountActive;

}

**public** **void** setNumber (**int** inputNumber) {

number = inputNumber;

}

**public** **int** getNumber () {

**return** number;

}

**public** **void** setName (String inputName) {

name = inputName;

}

**public** String getName () {

**return** name;

}

**public** **void** setAmount (**float** inputAmount) {

amount = inputAmount;

}

**public** **float** getAmount () {

**return** amount;

}

**public** **void** deposit (**float** amountDeposited) {

amount = amount + amountDeposited;

}

**public** **void** withdraw (**float** amountWithdrawn) {

amount = amount - amountWithdrawn;

}

}

# CurrentAccount Class:

**final** **public** **class** CurrentAccount **extends** Account{

**int** number = 1;

**final** **float** minBalance = -400;

**public** **float** getMinBalance () {

**return** minBalance;

}

**public** **void** setAmount (**float** inputAmount) {

**if** (inputAmount >= 1) {

amount = inputAmount;

accountActive = **true**;

System.***out***.println("Thank you " + name +".");

System.***out***.println("Your account number is " + number +".");

System.***out***.println("Your balance is £" + amount +" and you have £" + (amount -minBalance) + " available.");

} **else** {

System.***out***.println("Please deposit at least £1 to activate this account.");

}

}

**public** **void** withdraw (**float** amountWithdrawn) {

**if** (amount - amountWithdrawn >= minBalance) {

amount = amount - amountWithdrawn;

} **else** {

System.***out***.println("You do not have the funds available to withdraw this amount.");

}

}

}

# SBAccount Class:

**final** **public** **class** SBAccount **extends** Account {

**int** number = 2;

**final** **float** minBalance = 100;

**float** interestAPR = 4;

**float** interest = 1.04f;

**public** **float** getMinBalance () {

**return** minBalance;

}

**public** **float** getInterestAPR () {

**return** interestAPR;

}

**public** **float** getInterest () {

**return** interest;

}

**public** **void** setAmount (**float** inputAmount) {

**if** (inputAmount >= minBalance) {

amount = inputAmount;

accountActive = **true**;

System.***out***.println("Thank you " + name +".");

System.***out***.println("Your account number is " + number +".");

System.***out***.println("Your balance is £" + amount +" and you have £" + (amount -minBalance) + " available.");

} **else** {

System.***out***.println("Please deposit at least £ " + minBalance + " to activate this account.");

}

}

**public** **void** withdraw (**float** amountWithdrawn) {

**if** (amount - amountWithdrawn >= minBalance) {

amount = amount - amountWithdrawn;

} **else** {

System.***out***.println("You do not have the funds available to withdraw this amount.");

}

}

}

# Output:

Please select your service:

1: Open new account.

2: Check balance.

3: Deposit.

4: Withdraw.

2

Please enter your account number.

2

That account is not recognised.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Please select your service:

1: Open new account.

2: Check balance.

3: Deposit.

4: Withdraw.

1

Please select your account:

1: Current account.

2: SB balance.

1

Please enter your name:

J

Please enter the account you want to deposit:

300

Thank you J.

Your account number is 1.

Your balance is £300.0 and you have £700.0 available.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Please select your service:

1: Open new account.

2: Check balance.

3: Deposit.

4: Withdraw.

2

Please enter your account number.

1

You have £300.0.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Please select your service:

1: Open new account.

2: Check balance.

3: Deposit.

4: Withdraw.

3

Please enter your account number.

1

You have £300.0.

Please enter the amount you would like to deposit.

200

You have £500.0.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Please select your service:

1: Open new account.

2: Check balance.

3: Deposit.

4: Withdraw.

4

Please enter your account number.

1

You have £500.0 and can withdraw £900.0.

Please enter the amount you would like to withdraw.

901

You do not have the funds available to withdraw this amount.

You have £500.0.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Please select your service:

1: Open new account.

2: Check balance.

3: Deposit.

4: Withdraw.

4

Please enter your account number.

1

You have £500.0 and can withdraw £900.0.

Please enter the amount you would like to withdraw.

400

You have £100.0.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Please select your service:

1: Open new account.

2: Check balance.

3: Deposit.

4: Withdraw.

1

Please select your account:

1: Current account.

2: SB balance.

2

Please enter your name:

J

Please enter the account you want to deposit:

10

Please deposit at least £ 100.0 to activate this account.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Please select your service:

1: Open new account.

2: Check balance.

3: Deposit.

4: Withdraw.

1

Please select your account:

1: Current account.

2: SB balance.

2

Please enter your name:

J

Please enter the account you want to deposit:

120

Thank you J.

Your account number is 2.

Your balance is £120.0 and you have £20.0 available.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Please select your service:

1: Open new account.

2: Check balance.

3: Deposit.

4: Withdraw.

3

Please enter your account number.

2

You have £120.0.

Please enter the amount you would like to deposit.

200

You have £320.0.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Please select your service:

1: Open new account.

2: Check balance.

3: Deposit.

4: Withdraw.

4

Please enter your account number.

2

You have £320.0 and can withdraw £220.0.

Please enter the amount you would like to withdraw.

120

You have £200.0.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Please select your service:

1: Open new account.

2: Check balance.

3: Deposit.

4: Withdraw.