

Joao Paulo Dos Santos Ferreira
Fundamentals of Programming I – CSIT 111_04
Professor Jiayin Wang
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Lab 05 Report

Exercise 1: A Bank Account Class

1. File *Account.java* contains a partial definition for a class representing a bank account. Save it to your directory and study it to see what methods it contains. Then complete the Account class as described below. Note that you won't be able to test your methods until you write ManageAccounts in question #2.

- Fill in the code for method *toString*, which should return a string containing the name, account number, and balance for the account.
- Fill in the code for method *chargeFee*, which should deduct a service fee from the account.
- Modify *chargeFee* so that instead of returning void, it returns the new balance. Note that you will have to make changes in two places.
- Fill in the code for method *changeName* which takes a string as a parameter and changes the name on the account to be that string.

2. File *ManageAccounts.java* contains a shell program that uses the Account class above. Save it to your directory, and complete it as indicated by the comments.

3. Modify ManageAccounts so that it prints the balance after the calls to chargeFees. Instead of using the getBalance method like you did after the deposit and withdrawal, use the balance that is returned from the chargeFees method. You can either store it in a variable and then print the value of the variable, or embed the method call in a println statement.

Answer:

```
// *****
// Account.java
//
// A bank account class with methods to deposit to, withdraw from,
// change the name on, charge a fee to, and print
// a summary of the account.
// *****
public class Account
{
    private double balance;
    private String name;
    private long acctNum;
```

```

// -----
//Constructor -- initializes balance, owner, and account number
// -----
public Account(double initBal, String owner, long number)
{
    balance = initBal;
    name = owner;
    acctNum = number;
}
// -----
// Checks to see if balance is sufficient for withdrawal.
// If so, decrements balance by amount; if not, prints message.
// -----

public void withdraw(double amount)
{
    if (balance >= amount)
        balance -= amount;
    else
        System.out.println("Insufficient funds");
}
// -----
// Adds deposit amount to balance.
// -----
public void deposit(double amount)
{
    balance += amount;
}
// -----
// Returns balance.
// -----
public double getBalance()
{
    return balance;
}
// -----
// Returns a string containing the name, account number, and
balance.
// -----
public String toString()
{
    return "Account name: " + name + ", Account number: " +
acctNum + ", Account balance: " + balance;
}

```

```

// -----
// Deducts $10 service fee //
// -----
public double chargeFee()
{
    balance = balance -10;
    return balance;
}
// -----
// Changes the name on the account
// -----
public void changeName(String newName)
{
    name = newName;
}
}

// *****
// ManageAccounts.java
//
// Use Account class to create and manage Sally and Joe's
// bank accounts
// *****
public class ManageAccounts
{
    public static void main(String[] args)
    {
        Account acct1, acct2;
        //create account1 for Sally with $1000
        acct1 = new Account(1000, "Sally", 1111);

        //create account2 for Joe with $500
        acct2 = new Account(500, "Joe", 2222);

        //deposit $100 to Joe's account
        acct2.deposit(100);

        //print Joe's new balance (use getBalance())
        System.out.println("Joe's balance after deposit: " +
                           acct2.getBalance());

        //withdraw $50 from Sally's account
        acct1.withdraw(50);
    }
}

```

```
//print Sally's new balance (use getBalance())
System.out.println("Sally's balance: after withdraw " +
                    acct1.getBalance());

//charge fees to both accounts and print their balances
System.out.println("Sally's balance after fees: " +
                    acct1.chargeFee());
System.out.println("Joe's balance after fees: " +
                    acct2.chargeFee());

//change the name on Joe's account to Joseph
acct2.changeName("Joseph");

//print summary for both accounts
System.out.println(acct1);
System.out.println(acct2);
}
}
```