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Fundamentals of Programing I – CSIT 111_04
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Lab 10 Report

Exercise 1: Opening

```
//*******************************************************
// Account.java
//
// A bank account class with methods to deposit, withdraw,
// and check the balance.
//*******************************************************

public class Account
{
    private double balance;
    private String name;
    private long acctNum;
    private static int numAccounts;

    //-----------------------------------------------
    //Constructor -- initializes balance and owner; generates random
    //account number
    //-----------------------------------------------
    public Account(double initBal, String owner)
    {
        balance = initBal;
        name = owner;
        acctNum = (int) (Math.random() * Integer.MAX_VALUE);
        numAccounts = numAccounts+ 1;
    }

    // Returns the total number of accounts created so far
    public static int getNumAccounts() {
      return numAccounts;
    }

    //-----------------------------------------------
    // 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");
    }
```

```
//-----------------------------------------------
// Checks to see if balance is sufficient for withdrawal.
// If so, decrements balance by amount; if not, prints message.
// Also deducts fee from account.
//-----------------------------------------------
public void withdraw(double amount, double fee)
{
    if (balance >= amount)
    {
        balance -= amount;
        balance -= fee;
    }
    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 account number
//-----------------------------------------------
public double getAcctNumber()
{
    return acctNum;
}


//-----------------------------------------------
// Returns a string containing the name, acct number, and balance.
//-----------------------------------------------

public String toString()
{
    return "Name: " + name +
            "\nAcct #: " + acctNum +
            "\nBalance: " + balance;
}
```

```
    //-----------------------------------------------
    // Close this account.
    //-----------------------------------------------
    public void close()
    {
      name = "CLOSED";
      balance = 0;
      numAccounts = numAccounts -1;
    }

    //-----------------------------------------------
    // Create a new account whose balance is the sum of
    // the two given accounts, and close the given
    // accounts.
    //-----------------------------------------------
    public static Account consolidate(Account acct1, Account acct2) {
      String name = acct1.name;
      if (name.equalsIgnoreCase(acct2.name) && acct1.acctNum != acct2.acctNum) {
         Account nAcc = new Account(0, "");

         nAcc.balance = acct1.balance + acct2.balance;
         nAcc.name = acct1.name;
         acct1.close();
         acct2.close();
         return nAcc;
         }

      if (!name.equalsIgnoreCase(acct2.name)) {
         System.out.println("Accounts with different names cannot be consolidated");
      } else if (acct1.acctNum == acct2.acctNum) {
         System.out.println("Accounts with different numbers cannot be consolidated");
      }
      return null;
    }
}
```

```java
//*********************************************
// TestAccounts1
// A simple program to test the numAccts method of the
// Account class.
//*********************************************
import java.util.Scanner;

public class TestAccounts1
{
    public static void main(String[] args)
    {
   Account testAcct;

   Scanner scan = new Scanner(System.in);

   System.out.println("How many accounts would you like to create?");
   int num = scan.nextInt();

   for (int i=1; i<=num; i++)
       {
      testAcct = new Account(100, "Name" + i);
      System.out.println("\nCreated account " + testAcct);
      System.out.println("Now there are " + Account.getNumAccounts() + " accounts");
       }
    }
}
```

```java
//*********************************************
// TestAccounts2
// A simple program to test the closing and consolidation
// features of the Account class.
//*********************************************
import java.util.Scanner;

public class TestAccounts2
{
    public static void main(String[] args)
    {
   String name;
   Account acct1, acct2, acct3, acct4;
   Scanner scan = new Scanner(System.in);

   //Create first account
   System.out.print("\nEnter name for first account: ");
   name = scan.next();
   acct1 = new Account(100, name);
   System.out.println("Created account for " + name + " with balance $100.");

   //Create second account
   System.out.print("\nEnter name for second account: ");
   name = scan.next();
   acct2 = new Account(100, name);
   System.out.println("Created account for " + name + " with balance $100.");

   //Create third account
   System.out.print("\nEnter name for third account: ");
   name = scan.next();
   acct3 = new Account(100, name);
   System.out.println("Created account for " + name + " with balance $100.");
   //Close first account
   System.out.println("Closing first account.");
   acct1.close();

   //Consolidate second and third accounts
   System.out.println("Trying to consolidate second and third accounts.");
   acct4 = Account.consolidate(acct2, acct3);
   System.out.println("Result account is " + acct4);

   //Print number of accounts
   System.out.println("Number of accounts is now " + Account.getNumAccounts());
    }
}
```