Opening and Closing Accounts

File *Account.java* (see previous exercise) contains a definition for a simple bank account class with methods to withdraw, deposit, get the balance and account number, and return a String representation. Save this class to your directory and study it to see how it works. Then write the following additional code:

1. Suppose the bank wants to keep track of how many accounts exist.
   a. Declare a private static integer variable numAccounts to hold this value. Like all instance and static variables, it will be initialized (to 0, since it's an int) automatically.
   b. Add code to the constructor to increment this variable every time an account is created.
   c. Add a static method *getNumAccounts* that returns the total number of accounts. Think about why this method should be static - its information is not related to any particular account.
   d. File *TestAccounts1.java* contains a simple program that creates the specified number of bank accounts then uses the getNumAccounts method to find how many accounts were created. Save it to your directory, then use it to test your modified Account class.
2. Add a method void close() to your Account class. This method should close the current account by appending "CLOSED" to the account name and setting the balance to 0. (The account number should remain unchanged.) Also decrement the total number of accounts.
3. Write a test program `TestAccounts2` that prompts for and reads in three names and creates an account with an initial balance of $100 for each. Print the three accounts, then close the first account. Call `numAccounts()` to print the number of accounts.

```
//*********************************************************
// Account.java
//
// A bank account class with methods to deposit to, withdraw from,
// change the name on, and get a String representation
// of the account.
//*********************************************************
public class Account
{
        private double balance;
        private String name;
        private long acctNum;
         //-----------------------------------------------
         //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);
         }

        //-----------------------------------------------
        // 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 "Name:" + name +
                "\nAccount Number: " + acctNum +
                "\nBalance: " + balance;
        }
}
```

```
//*********************************************************
// 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.numAccounts
                  () +
                  " accounts");
            }
      }
}
```