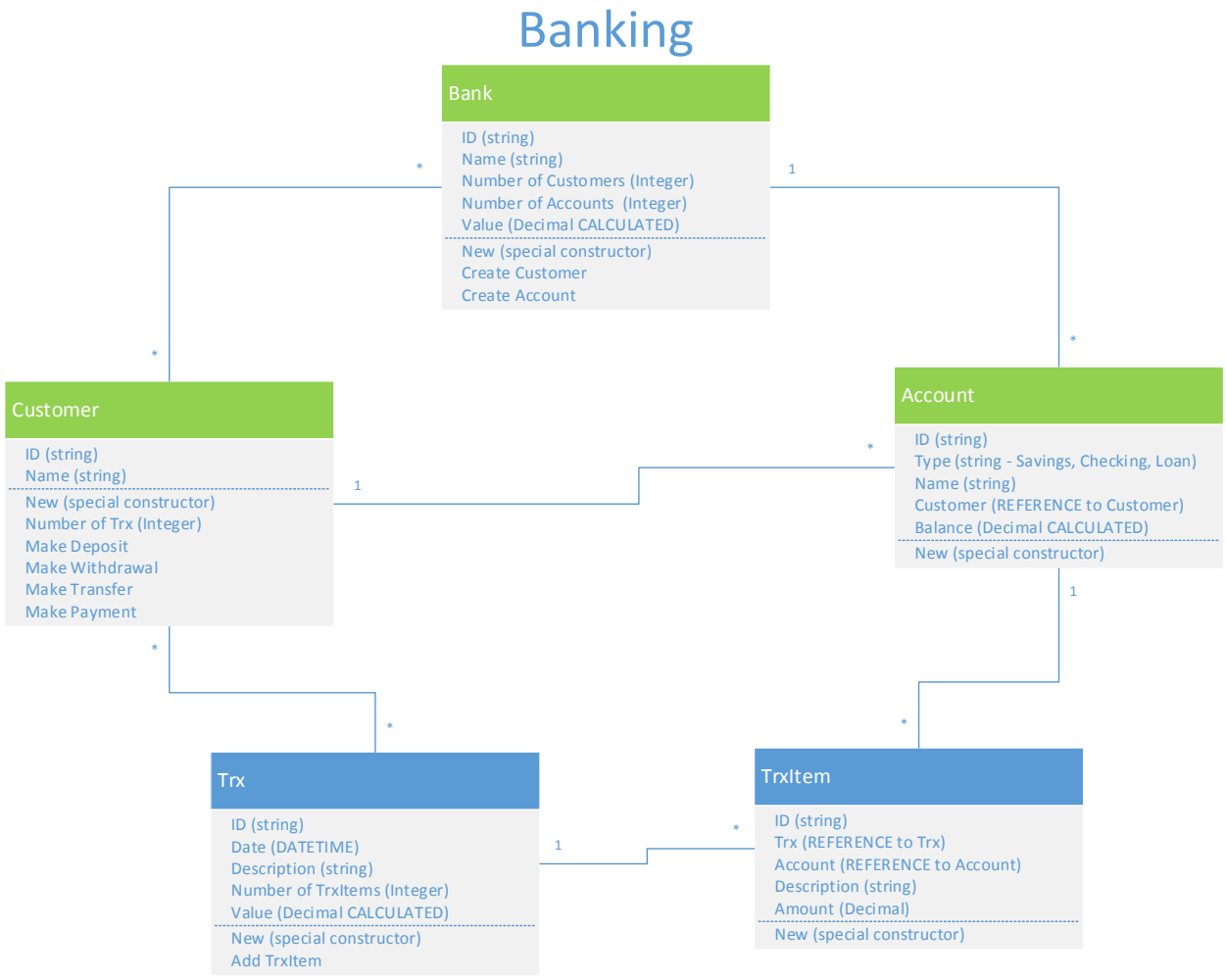
CIS605 Test 2 – Programming Questions

Fall 2015

Scenario:

The figure below shows a simple Class Diagram illustrating some possible relationships in a Banking system. All of the programming questions relate to the Banking scenario and this diagram. Follow the standard naming conventions and Class Template specified for use this Semester. No specific internal comments/documentation is required, but the various parts of the Class Template should all exist even if they are not filled in and the code you write should be located in the proper places in the Template. The Class Diagram shows more classes than you are required to work with for this test. You will only work with classes that are highlighted in GREEN. You do not have to do anything for or with the CALCULATED fields.

Class Diagram:



Programming Questions:

1. Customer class. Using the standard approaches we have been taking this semester, do the following:
    a. (1 pts) Create the class with the Template we are using this semester. (Should already have been started in "preparation ahead of time" activities.)
    b. (2 pts) Create the attributes section.
    c. (2 pts) Create a single constructor, a special constructor with parameters for each of the attributes. Have this constructor call its parent's constructor.
    d. (2 pts) Create public and private property procedures for the attributes. Make the Public property procedure for the ID attribute ReadOnly.
    e. (2 pts) Create public and private "ToString" methods.
2. Account class. Using the standard approaches we have been taking this semester, do the following:
    a. (1 pts) Create the class with the Template we are using this semester. (Should already have been started in "preparation ahead of time" activities.)
    b. (2 pts) Create the attributes section.
    c. (2 pts) Create a single constructor, a special constructor with parameters for each of the attributes (but not the Balance attribute). Have this constructor call its parent's constructor.
    d. (2 pts) Create public and private property procedures for the attributes. Make the Public property procedure for the ID, Type, and Customer attributes ReadOnly.
    e. (2 pts) Create public and private "ToString" methods.
3. Bank class. Using the standard approaches we have been taking this semester, do the following:
    a. (1 pts) Create the class with the Template we are using this semester. (Should already have been started in "preparation ahead of time" activities.)
    b. (6 pts) Create the attributes section.
    c. (6 pts) Create a single constructor, a special constructor with parameters for each of the attributes. Have this constructor call its parent's constructor.
    d. (6 pts) Create public and private property procedures for the attributes. Make the Public property procedures for the ID, Number of Customers, and Number of Accounts attributes ReadOnly.
    e. (4 pts) Create public and private "ToString" methods.
    f. (8 pts) Using the approach we've been following this semester, create public and private "CreateCustomer" methods. These methods will have two parameters – Customer ID and Customer Name. The method will create the Customer object, increment the count of the number of Customers in the Bank, and return a reference to the created Customer. Use the Customer's special constructor to create the actual object, and increment the count of how many Customers the Bank has.
    g. (8 pts) Using the approach we've been following this semester, create public and private "CreateAccount" methods. These methods will have four parameters – Account ID, Account Type (which can have the values "Savings", "Checking", or "Loan"), an Account Name (like "Sarah's Checking", "Bill's Savings", "House Loan", etc.), and a reference to a Customer. The method will create the Account object, increment the count of the number of Accounts in the Bank, and return a reference to the created Account. Use the Account's special constructor to create the actual object, and increment the count of how many Accounts the Bank has.

4. Main form.
    a. (1 pts) Create the class with the Template we are using this semester. (Should already have been done in “preparation ahead of time” activities.)
    b. Include hard-coded test-data in the “Process Test Data” button’s event procedure to do the following:
        i. (4 pts) Declare variables for the following:
            1) One bank.
            2) Three customers.
            3) Five accounts.
        ii. (9 pts) Create and populate (initialize) each of the above-declared variables and sequentially display (in the order described above) each “transaction” on a separate line in the “Transaction Log” TextBox.
            1) One bank, with the data shown below.
                a. B01, CIS605 Bank of Commerce
            2) Three customers, with the data shown below. Use the CreateCustomer methods you created above to do this.
                a. C01, Sarah
                b. C02, Bill
                c. C03, Jolene
            3) Five accounts, with the data shown below. Use the CreateAccount methods you created above to do this.
                a. A01, Savings, “Sarah’s Savings”, <reference to Customer C01>
                b. A02, Savings, “House Down Payment”, <reference to Customer C02>
                c. A03, Checking, “Jolene’s Checking”, <reference to Customer C03>
                d. A04, Loan, “Car loan”, <reference to Customer 03>
            4) Again display the status of the Bank after all the above transactions have been processed.