**BCS 230 Lab – Inheritance - BankAccount**

***Overview***

Write a program that uses inheritance to create a class.

***Part 1***

Create a new solution and add the following files to it:

* BankAccount.h – Add to the Headers folder.
* BankAccount.cpp – Add to the Source folder.
* Main.cpp – Add to the Source folder. Will contain the main function.

***Part 2***

Define a **BankAccount** class (.h file). This will be the base class.

**Write member variables**. The list below shows the member variables and their types. All member variables should be declared as private.

* Account name
* Account balance

**Write get/set functions** for all member variables. These function definitions should be defined in the BankAccount.cpp file.

**Write two constructors.**

* Default constructor. The default constructor should initialize all member variables to some reasonable default values.
* Two parameter constructor. Each parameter should correspond to a member variable. It should initialize the member variables with data from the passed in parameters.

**Write the destructor** for BankAccount. The destructor is used for clean-up code. It does not need to do anything in this class.

**Write the Deposit function**. The Deposit function should add the passed in amount to the balance. Here is the function prototype: **void Deposit(double amount);**

**Write the Withdraw function**. The Withdraw function should subtract the passed in amount from the balance. Here is the function prototype: **void Withdraw(double amount);**

**Write the Show function.** The Show function should print all of the member variable values on the screen. No descriptive text. Here is the function prototype: **void Show();**

***Part 3***

**Write the main function.** Inside of main() create one instance of the BankAccount class. Make sure you call Deposit and Withdraw. Finally, print out the values on the instance you created.

***Part 4***

Define an **InterestAccount** class (.h file). This class will be created using inheritance. It should be derived from BankAccount. You will need files named InterestAccount.h and InterestAccount.cpp.

**Write member variables**. The list below shows the member variables and their types. All member variables should be declared as private.

* Interest

**Write get/set functions** for all member variables. These function definitions should be defined in the InterestAccount.cpp file.

**Write two constructors.**

* Default constructor. The default constructor should initialize interest to .1 .Make sure to call the base class constructor.
* Three parameter constructor. Each parameter should correspond to a member variable in either InterestAccount or BankAccount. Make sure to call the base class constructor. The base class constructor will initialize account name and account balance.

**Write the ApplyInterest function**. The ApplyInterest function should calculate the interest amount and add it to the balance. Here is the function prototype: **void ApplyInterest();**

**Write the Show function.** The Show function should print all of the member variable values on the screen. No descriptive text. Here is the function prototype: **void Show();**

***Part 5***

**Update the main function.** Inside of main() create one instance of the InterestAccount class. Make sure you call Deposit, Withdraw, and ApplyInterest. Finally, print out the values on the instance you created.

***Part 6***

Define a **Customer** class (.h file). You will need files named Customer.h and Customer.cpp. This class will be created using composition (other classes as member variables).

**Write member variables**. The list below shows the member variables and their types. All member variables should be declared as private.

* Name
* Savings (data type is InterestAccount)
* Checking (data type is InterestAccount)

**Write get/set functions** for the name member variable. These function definitions should be defined in the Customer.cpp file.

**Write the DepositSavings function**. The DepositSavings function should call a function on the InterestAccount class. Here is the function prototype: **void DepositSavings(double amount);**

**Write the WithdrawSavings function**. The WithdrawSavings function should call a function on the InterestAccount class. Here is the function prototype: **void WithdrawSavings(double amount);**

**Write the DepositChecking function**. The DepositChecking function should call a function on the InterestAccount class. Here is the function prototype: **void DepositChecking(double amount);**

**Write the WithdrawChecking function**. The WithdrawChecking function should call a function on the InterestAccount class. Here is the function prototype: **void WithdrawChecking(double amount);**

**Write the Show function.** The Show function should print all of the member variable values on the screen. No descriptive text. Here is the function prototype: **void Show();**

***Part 7***

**Update the main function.** Create an instance of the Customer class in main. Make sure you set values on that instance. Print the values of the Customer on standard output.