CS2563: C#
Assignment 4: Bank Account

Create a base class named *Account* and derived classes named *SavingsAccount* and *CheckingAccount* that inherit from class *Account*.

Base class *Account* should include one private instance variable of type decimal to represent the account balance. The class should provide a constructor that receives an initial balance and uses it to initialize the instance variable with a public property. The property should validate the initial balance to ensure that it's greater than or equal to 0.0; if not throw an exception. The class should provide two public methods. Method *Credit* should add an amount to the current balance. Method *Debit* should withdraw money from the *Account* and ensure that the debit amount does not exceed the *Account's* balance. If it does, the balance should be left unchanged, and the method should display the message *"Debit amount exceeded the account balance."* The class should also provide a *get* accessor in property *Balance* that returns the current balance.

Derived class *SavingsAccount* should inherit the functionality of an *Account*, but also include a decimal instance variable indicating the interest rate (percentage) assigned to the account. *SavingsAccount's* constructor should receive the initial balance, as well as an initial value for the interest rate. *SavingsAccount* should provide public method *CalculateInterest* that returns a decimal that indicates the amount of interest earned by an account. Method *CalculateInterest* should determine this amount by multiplying the interest rate by the account balance.[Note : *SavingsAccount* should inherit methods *Credit* and *Debit* without redefining them.]

Derived class *CheckingAccount* should inherit from base class *Account* and include a decimal instance variable that represents the fee charged per transaction. *CheckingAccount's* constructor should receive the account's initial balance, as well as a parameter indicating a fee amount. Class **CheckingAccount** should redefine methods *Credit* and *Debit* so that they subtract the fee from the account balance whenever either transaction is performed successfully. *CheckingAccount's* version of these methods should invoke the base-class *Account* version to perform the updates to an account balance. *CheckingAccount's Debit* method should charge a fee only if money is actually withdrawn (i.e., the debit amount does not exceed the account balance). [Hint: Define Account's *Debit* method so that it returns a bool indicating whether money was withdrawn. Then use the return value to determine whether a fee should be charged.]

After defining the classes in this hierarchy, write an app that creates objects of each class and tests their methods. Add interest to the *SavingsAccount* object by first invoking its *CalculateInterest* method, then passing the returned interest amount to the object's *Credit* method.