Credit Card and Person Classes

This lab looks at class composition, at how you can include one class inside another class. For this lab, you will create two classes, a Person class and a Credit Card class that uses the Person class. The credit Card class will contain an instance of the Person class as a variable.

Program Design

For this assignment, you will be setting up a class that represents a credit card. Each card will have a card number, balance, credit limit and an account owner. Because the account owner is represented by common data elements like name and address that could apply to many scenarios, we are going to represent that information with a Person class, which we could then reuse in the future. Thus, for this assignment, you will be writing two classes: a CreditCard class that contains information about a credit account, and a Person class which contains basic biographical information about a person.

You will create the two classes and then use the provided test program to make sure it works. This means that your class and methods must match the names used in the test program. You should have two files, CreditCard.py and Person.py. CreditCard will import Person in order to be able to use the information in it.

When all is working, you should zip up your complete project and submit it.

Program Requirements

The CreditCard class should support the following functions:

- **Initialization** – the initialization method should take a first and last name, address, card number, and credit limit. The CreditCard initialization will create a Person object and initialize it with the information passed to CreditCard. If values are not provided when creating a new CreditCard, you should make first name, last name, and address all empty strings. Card number and credit limit should default to 0.
- **getBalance** – returns the current card balance
- **getCardNumber** – returns the card number
- **getOwnerName** – returns the first and last name of the card owner from the associated Person
- **getAddress** – returns the card holder's address
- **payBalance** – takes a value as an argument and applies that payment to the balance. Payments must be non-negative values, but a negative balance is acceptable. This function should return a Boolean value: true if the payment was applied and false if it was not (due to negative payment amount).
- **makeCharge** – takes a value and charges that amount to the card, increasing the balance. Charges must be positive and cannot cause the balance to exceed the credit limit. This function should return a Boolean: true if the charge was *applied*, false otherwise

- **setCreditLimit** – takes a value and sets the credit limit to a new value. Note that the credit limit may be set to a value that is below the current balance, but it cannot be set to a negative value. Return true if this succeeds, false if it fails.

- **getCreditLimit** – returns the current credit limit.

The Person class should support the following functions:

- **Initialization method** – should take a first name, last name, and address (each of which defaults to an empty string)

- **Setters** for firstName, lastName, and address

- **Getters** for firstName, lastName, and address

Program Hints

Create your Person class and make sure that is working using the test driver.

Then create the CreditCard class and include a Person in it. Get the basic methods working fine (constructor, getBalance, getOwnerName, getAddress). Finally add the other methods and test the entire program.

Note that getOwnerName will call getFirstName and getLastName from the Person and put together an ownerName.