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IT FDN110 A Spring 24: Foundations of Programming: Python

Assignment 7

<https://github.com/bpanganuw524/IntroToProg-Python-Mod7.git>

Classes, Constructors and Properties

Introduction

In this week's assignment, we continued and built from the lesson of the previous week of Classes. One of the lessons we focused on this week is a function in Classes called Constructors. With the lesson of Constructors, we also focused our attention on various attributes that can be set within those Constructors called Properties. Finally, we briefly learned one of the core concepts of object-oriented programming, Inheritance.

Constructors and Properties

The concept of Constructors builds on the concept of Classes and is a means of creating an object that can be initialized with different attributes. Using the key word "self", I realized that I can associate certain data to an object instance rather than change the Class itself. This took some practice; the lab was very helpful with the concept and stepping through the example using the debug function was very helpful with visualizing what was happening. This was also useful with learning how Properties worked. Using Getters and Setters to help format the Constructors were key to understanding the lab.

Inheritance

Another important lesson in this week's module is the use of Inheritance. Personally, this was one of the concepts that I would like to dive into more thoroughly. Having code that is portable is very important in object-oriented programming. The concept of a parent-child relationship between different sources of code is one of the many topics of inheritance. Also, being able to group constructors and objects into different categories is useful for utilizing code from di

Creating the program

This week's assignment focused mainly on creating Constructors and using Properties, expanding our knowledge of Classes. My first constructor that I focused on was the first name. I used the @property decorator to show exactly where my getter would be within the class. I then did the same thing with the last name.

```
1 usage
@property    #(getter)
def first_name(self):
    return self.__first_name.title()

@first_name.setter
def first_name(self, value: str):
    if value.isalpha() or value == '':
        self.__first_name = value
    else:
        raise ValueError("The first name should not contain numbers.")
```

Figure 1: Getter and Setter of First Name

One of the important items that I learned in this assignment was to differentiate student from person. I do not think I fully understand Classes in the last assignment, which made this assignment take a while understand.

```
class Student(Person):
    """ This function creates a student from the person class for each student line

    ChangeLog: (Who, When, What)
    RRoot,1.1.2030,Created function
    BPangan, 5.29.2024, created function

    """
    course_name: str = ""

    def __init__(self, first_name: str = "", last_name: str = "", course_name: str = ""):
        super().__init__(first_name=first_name, last_name=last_name, course_name=course_name)

    # adding course to person to create student
1 usage
@property    #(getter)
def course_name(self):
    return self.__course_name.title()

@course_name.setter
def course_name(self, value: str):
    if value.isnumeric() or value == '':    #not sure if this would work. any suggestions
        self.__course_name = value
    else:
```

Figure 2: Student class utilizing Person Class

I then used the person class to create the student class and adding the course name to the object. There is still a lot to learn about Classes, but I think I have a much better understanding of them than last week.

Summary

At the completion of this module, I was able to successfully use the concepts of Inheritance, Properties and Constructors. As stated above, I would like to better understand the concepts of Inheritance as well as review Separation of Concerns. The assignment demonstrates my understanding of the topics listed above. I look forward to diving deeper into some of these concepts on the next assignment.