Brooke Biscoe

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Foundations of Programming: Python

Assignment 08

<https://github.com/Brocoe/IntroToProg-Python-Mod08>

**Classes and Objects**

*Introduction*

This week I learnt about classes and how they are constructed. I learnt about how there is a standard pattern within a class and learnt about certain keywords that need to be used in a class. I learnt about the different things that can be included within a class and the reason whct one would include a docstring. Finally, I learnt about Github Desktop and how to use it on my computer.

*What is a class and how is it constructed?*

Classes are a way of grouping data and functions, and most classes are designed to focus on either data or processing. When a class loads into memory, that class can be used either directly or indirectly. When you use a class indirectly you create an object instance of the class. When you use an object instance each instance takes up a different place in memory and thus you can have multiple instances.

Classes tend to be organized in a standard pattern. This pattern has the following categories that follow this order.

* Fields – The data members of the a class. They are created using variables and constants
* Constructors – these are special methods that automatically run when you create and object from the class.
  + Attributes – These are virtual fields that hold internal data.
* Properties – These are functions used to manage fields or attribute data.
* Methods – any other function inside of a class that does manage attribute data.

One significant category from the above list is the constructor category. Constructors are often used to set the initial values of field data and as mentioned before run automatically when you create an object from the class. In Python the “\_\_init\_\_” constructor is used and allows you to pass arguments to the object.

*Class Keywords*

The keyword self is used in the constructor method to refer to a data or function found in an object instance but not directly in the class. Since you can have multiple instances of a class you need to use the self keyword so that the instance knows that you are referring to that specific instance. The @staticmethod keyword is used when you want to call the methods directly from the class without making an object first. Most classes that focus on processing data would use the @staticmethod keyword.

*Fields, Attributes, properties and methods*

As I have discussed above fields, attributes and property functions all involve the handling and management of data within an object of a class. Also as mentioned, a method is any function inside a class that does not manage attribute data.

A docstring is useful to have in your classes because it helps to explain to other developers what the class does and how to use it.

*GutHub Desktop*

Git is a software that manages the versions of one or more files. It allows you to make a copy a file and then make changes to that file. Github is simply the website and cloud service that allows users to use the Git software for their projects. GitHub desktop is an application that allows users to interact with the website from their desktop.

*Assignment*

In this assignment I had to use what I had learnt about class and objects in order to create a file processor that stored information about items and their prices. I found that working with classes could be a bit challenging but overall I was able to get my program to work. Below are some screen shots of my program working in both PyCharm and the Command Window.

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In addition to working with classes I also had to use GitHub desktop to upload my files to the repository I found the instructions to do this to be quite simple to follow. Below I have captured some screenshots of my creating the repository and uploading the files.

A screenshot of a computer

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A screenshot of a computer

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*Conclusion*

Overall, I would say this has been a good introduction into working with classes and objects. Learning about private methods was challenging and at times confusing and while I still do not feel fully comfortable with this aspect, I believe that I have better handle on the subject.