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Foundations of Programming: Python

Assignment 08

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

**Working With Classes**

**Introduction**

In this module we took a deeper dive into classes and how they are used. A class serves as a way to group data and/or functions. They are a powerful too used to keep ones written code well organized and efficient. The standard class pattern consists of fields, constructors, attributes, properties, and methods. It can also be useful to include a docstring in a class. In this module we created a program that asked a user to assemble a product list which was uploaded onto GitHub Desktop.

**The Standard Class Pattern**

The standard class pattern of classes begins with fields. Fields are the data members of a class and are created using variables and constants. They function very similarly to how one would define variables at the beginning of a script, but in this case, they would be specific to the class. Next are the constructors. Constructors are functions that automatically run when an object is created from a class. They are often used to set initial values of the field data. In Python, constructors use double underscore, or dunder. When an object instance is created from a class, the class’s name is used as if it were a function. The constructor uses the keywork “self” which refers to data or functions found in an object instance, but not directly in the class. The code of a class always loads into memory when the script starts running. If an explicit object instance is created, the class and object instances will be held in different parts of the computers memory. A class’s code and only be loaded into memory one, but there can be multiple instances of a class. The pronoun “self” is used to identify which copy is being referenced. Attributes come next. They are virtual fields that that hold internal data. An invisible field is created. Properties are functions used to manage field or attribute data. Two properties are typically created known as “getters”, and “setters”. Setter properties let you add code for validation and error handling. If a value passed into the properties parameter is valid then it is assigned to the field attribute. Getter properties let you add code to format a fields data. Methods are used to organize processing statements into named groups. Static Methods allow you to include methods called direcly from the class without making an object first. No need to include the keyword “self”.

**Product List Program**

Below you will find a copy of my program running successfully in both PyCharm and Windows CMD.

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| Figure 1. Product List program running in PyCharm |

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| Figure 2. Product List Program running in CMD |

**Summary**

This module was all about classes. We learned that the Standard Class Pattern of a class consists of fields, constructors, attributes, properties and methods. We learned how each of these function in order to make classes a useful tool in organizing code for efficiency. We took this lesson and created a program that prompts the user to create a product list. The work was then uploaded into GitHub Desktop.