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IT FDN 110 A Au21: Foundations of Programming: Python

Assignment Module 08: Classes and Objects

GitHubURL: <https://github.com/GermanGornalusse/ITFnd100-Mod08>

How to Use Classes through the Creation of Objects-Instances and by the Application of the Static Method

# Introduction

In this paper, I will show you how to create three different classes, using object-instances and applying the static method. In this example, the user will be prompted to enter a product name and a corresponding price. You will learn how to create a **Product** class to store the data for both variables. You will learn how this Product class will be useful to “bundle” this data and how you can create objects from this Product class. This class will have attributes attached to it to maintain its state and methods (of embedded functions) to modify it. You will also review the concept of the Static Method, applied to both a **FileProcessor** and an **I/O classes**. In this latter method, you will learn how to call the class directly, without making an object of its class.

In this exercise, you will apply the concept of error handling (“Try:Except” modules) and you will also be introduced to the **GitHub desktop** application.

For simplicity, I will assume you will be using Windows operating system.

## **Step 1. Create a subfolder in your C: Drive\\_PythonClass**

The following instructions will allow you to create this subfolder in your hard drive: **C:/\_PythonClass/Assignment08**

a) Left double click on “\_PythonClass” folder (to open it)

b) Right click> New > Folder

c) Name the folder as Assignment 08\_Yourlastname

I am showing you how the final path to this folder will look like (**Figure 1**):



**Figure 1. Path to the folder where you will save your Assignment 08. I used my last name (“German Gornalusse”) as an example to personalize my subfolder.**

## **Step 2. Create a new Project in PyCharm**

You will create a new project in PyCharm that uses the \_PythonClass\Assignment08\_last name folder as its location. I assume you will have installed PyCharm on your C:\ drive or on your desktop.

a) Double click the icon “PyCharm Community Edition 2021.2.3”. Mine shows up on my desktop.

b) Select: File> New Project

c) In location type C:\\_PythonClass\Assignment08 to select the file subfolder wherein you will save your project. Alternatively, you can browse the destination folder by selecting the “open folder” symbol at the end of “Location” and manually by browsing and selecting the final folder. [See yellow arrow, on **Figure 2**]

d) Select “New environment using Virtualenv” option. And “Create a main.py” welcome script option. [See orange arrow, Figure 2]. Make sure the Base interpreter is set “Python 3.10” (or the latest version you installed in your computer).

e) Select “Create” (lower right corner of your screen). [**Figure 2**]

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**Figure 2 How to create a new project in C:\\_PythonClass\Assignment 08 subfolder using the IDE PyCharm**

To do that:

a) File> Open

b) Select Assignment 08 subfolder

c) Select either “This window” or “New Window”. Notice how, on the left-hand side, the “Assignment 08” subfolder shows up. In **Figure 3** I am illustrating this example.

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**Figure 3. PyCharm window showing current folder where your Python scripts for the Assignment08 will be saved**

Note # 1: In the Assignment08 project folder, I also saved ancillary files (e.g., Listing 7, Listing 9) because I used them as examples to build the final assignment. I will delete the “unnecessary” files before I upload them onto GitHub folder.

Note # 2: The initial script (draft) was saved as Assignment 08 version1. The final version to be corrcted and graded will be named: “Assignment 08\_Gornalusse”.

## **Step 3. Create a Python Script in the Project Folder: “Assignment08\_Gornalusse” using as a template: “Assignment 08\_Starter”.py**

a) Right click (Context menu) Assignment 08 folder

b) File> New> Python File > Assignment 08\_version 1

You will copy and paste the content of the script from Assignment 08\_Starter (you previously have to drag this file to the Assignment 08\_last name folder) to Assignment 08\_version 1 file.

After you finish doing or the edits to this file, you will save the final file as “Assignment 08\_last name” (in my case, Assignment 08\_Gornalusse).

Below in **Figure 4**, you will see the Assignment 08\_version 1 ran properly in the PyCharm console:

A screenshot of a computer

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**Figure 4. PyCharm console showing Assignment08.py running properly in the console**

In the following **Figure 5** below, I illustrate how the assignment 08 worked properly once it is ran on OS command shell:

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**Figure 5. PyCharm can be ran correctly in the OS command shell**

## **Step 4. Post Files to GitHub using GitHub Desktop**

In this section, you will post your files (Word document and Python file) on a public GitHub repository.

a) Create a new repository called "IntroToProg-Python-Mod08" on your local computer. The pathway I used in my case is: "C:\Users\12063\Documents\GitHub\ITFnd100-Mod08\”. The steps below will create a GitHub folder in your computer.

File > New Repository >

Give it a name and a description. Select “Create a repository” (**Figure 6).**

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**Figure 6. Creating a new local repository**

Copy your Python script and knowledge document (Word file) from your \_Pythonclass folder ("C:\\_PythonClass\Assignment 08\_Gornalusse", in my case) **into the local GitHub repository folder** "C:\Users\12063\Documents\GitHub\ITFnd100-Mod08\”.

Review the new copied files in GitHub Desktop, add a title and description of the change, then click the "Commit to main" button to finalize the change.

To upload both of your files to the repository using GitHub Desktop's "Push origin" button **(Figure 7).**

Graphical user interface, text

Description automatically generated with medium confidence ***Figure 7. Uploading files with the "Push origin" button***

Go to your GitHub website, login, and verify that the new repository and your files are there (**Figure 8)**

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***Figure 8. Verification that the uploaded files are in the GitHub folder of your repository.***

# Summary

In this paper, you were introduced to the creation and usage of different type of classes. I showed you how you can store data from a product and a price the user entered. By doing so, you learned what a class is, how is the architecture of a class, its attributes, properties and methods. The most important concept is you will have practiced how you can create an instance of a class (akin to a “copy”) using objects. You will probably be able to practice the concepts you previously learned in other papers that covered the static method and error handling. The take-home message of this assignment if for you to conceptualize how by using classes, you can “bundle” data and functionality to streamline programming. In addition to this core concept, you will be able to upload your files to GitHub using the GitHub desktop application.