

Functions and Classes

Introduction

In week 6, we covered the topics of creating scripts using functions and classes, using the PyCharm debugger, and launching a GitHub web page.

Definitions

Functions: Is a grouping of one or more statements

Parameters: Allows for values to pass through a function

Arguments: Are the values that pass through the function using parameters

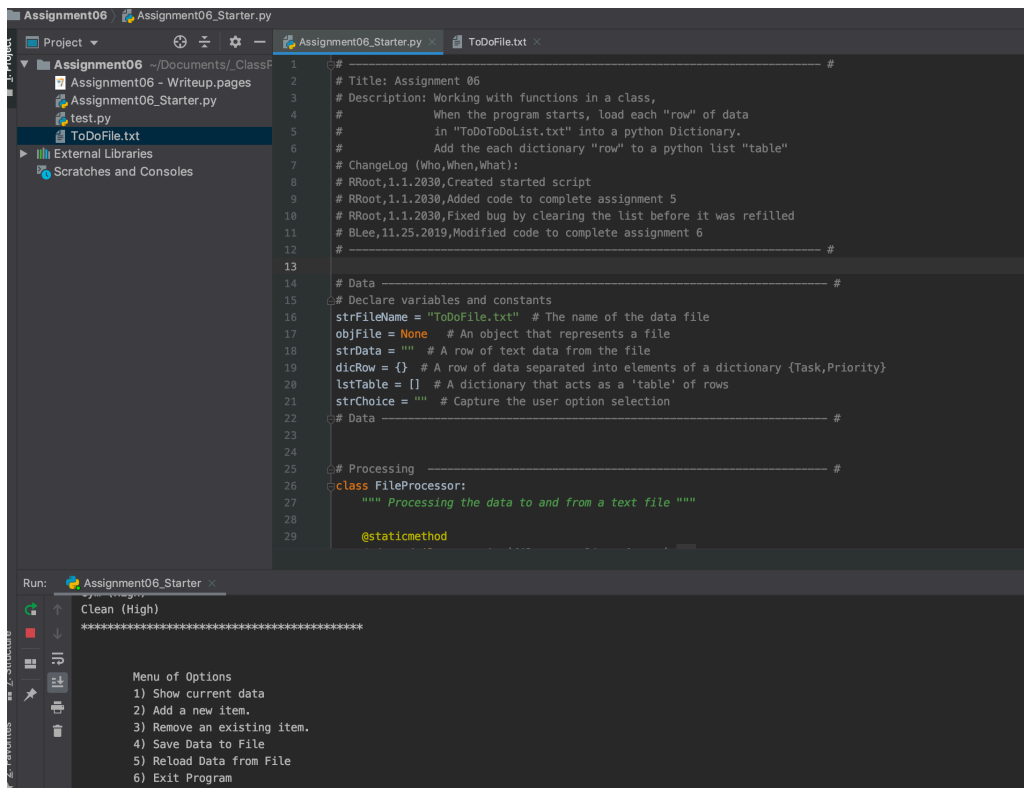
Return Values: Allows the function to operate as an expression, where the results of the function are used immediately rather than placing them in a variable

Local Variables: Are variables declared within a function and cannot be accessed from outside the function

Global Variables: Are variables declared in the body of the script and can be accessed from anywhere in the script

Creating and Running My To Do List Script

After reviewing the given videos/course materials provided in Module 6, our sixth assignment was to edit a given script and convert as many areas of the script into classes and functions in an effort to reduce the redundancy in the script. Essentially, any given script is recommended to be broken into 3 sections: data, processing, and main body of the script. However, to be able to write effective scripts, we were tasked to structure processing and presentation code in classes and functions to recall repetitive tasks in the main body of the script. In this assignment, we took a fully functioning script and refactored it to run more effectively.



```
1  # Title: Assignment 06
2  # Description: Working with functions in a class,
3  # When the program starts, load each "row" of data
4  # in "ToDoToDoList.txt" into a python Dictionary.
5  # Add the each dictionary "row" to a python list "table"
6  #
7  # ChangeLog (Who,When,What):
8  # RRoot,1.1.2030,Created started script
9  # RRoot,1.1.2030,Added code to complete assignment 5
10 # RRoot,1.1.2030,Fixed bug by clearing the list before it was refilled
11 # BLee,11.25.2019,Modified code to complete assignment 6
12 #
13
14 # Data
15 # Declare variables and constants
16 strFileName = "ToDoFile.txt" # The name of the data file
17 objFile = None # An object that represents a file
18 strData = "" # A row of text data from the file
19 dicRow = {} # A row of data separated into elements of a dictionary {Task,Priority}
20 lstTable = [] # A dictionary that acts as a 'table' of rows
21 strChoice = "" # Capture the user option selection
22
23 # Data
24
25 # Processing
26 class FileProcessor:
27     """ Processing the data to and from a text file """
28
29     @staticmethod
```

Run: Assignment06_Starter

Clean (High)

Menu of Options

- 1) Show current data
- 2) Add a new item.
- 3) Remove an existing item.
- 4) Save Data to File
- 5) Reload Data from File
- 6) Exit Program

Figure 1. Code in PyCharm

```
Assignment06 — Python Functions_and_Classes.py — 88x28
[Brians-MacBook-Pro:Assignment06 brianlee$ python3 Functions_and_Classes.py

Menu of Options
1) Show current data
2) Add a new item.
3) Remove an existing item.
4) Save Data to File
5) Reload Data from File
6) Exit Program

Which option would you like to perform? [1 to 6] - 1

***** The current items ToDo are: *****
Gym (High)
Clean (High)
*****

Menu of Options
1) Show current data
2) Add a new item.
3) Remove an existing item.
4) Save Data to File
5) Reload Data from File
6) Exit Program
```

Figure 2. Running the Python Script in Terminal

```
ToDoFile.txt
Gym,High
Clean,High
```

Figure 3. Output file from the Assignment6_Starter.py Script

Summary

Again, this assignment was a challenge, but I think I'm starting to getting a better grasp of how parameters are placed within functions and how arguments are passed through for processing. I agree, the ability to write code in this fashion does reduce redundancies and helps the script look a lot cleaner when reading through it. I can see how this will be extremely helpful when classes and functions are written not specific to the current script, so they would be useful in other scripts as well. One section of the code that was provided in this assignment where I am still unsure of what is happening is the function where a task is removed from the list. I am having trouble understanding how `row_number = 0` is used as a counter and why the boolean flag for `item_removed = False` is necessary.