Sopheaktra Danh
8/16/2020
Foundations of Programming: Python
Assignment 06
https://github.com/SDanh/IntroToProg-Python-Mod06

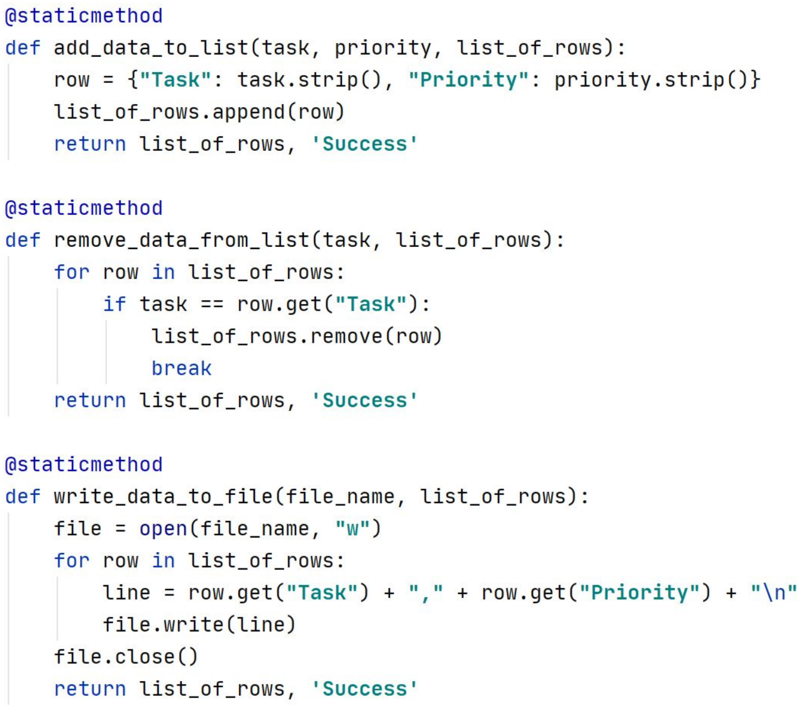
06: Functions & Classes

Introduction

This week was an introduction to functions and classes. It's culminating assignment was a continuation of the 'To-Do List' project except in this situation the majority of the code had already been implemented. How functions and classes tied into this was that the various operations were placed in functions that had to be implemented by the students.

Processor Class

The heart of the program was data processing. The reading of data from file to a tabular list was already implemented. What wasn't implemented was the addition and removal of entries to the table as well saving the tabular list back to file. Adding was the simplest as it took a pair of strings to create a new dictionary as a new 'row' to be appended onto the list; removal meanwhile required a for-loop to search for and removing the task. Writing was the most difficult and required looping from the tabular list and converting each dictionary row into a string/line to be written to file (Figure 1).

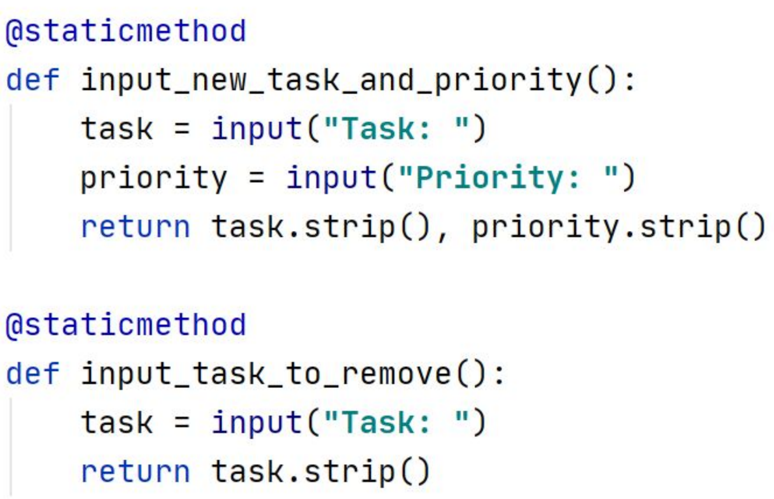


```
@staticmethod
def add_data_to_list(task, priority, list_of_rows):
    row = {"Task": task.strip(), "Priority": priority.strip()}
    list_of_rows.append(row)
    return list_of_rows, 'Success'

@staticmethod
def remove_data_from_list(task, list_of_rows):
    for row in list_of_rows:
        if task == row.get("Task"):
            list_of_rows.remove(row)
            break
    return list_of_rows, 'Success'

@staticmethod
def write_data_to_file(file_name, list_of_rows):
    file = open(file_name, "w")
    for row in list_of_rows:
        line = row.get("Task") + "," + row.get("Priority") + "\n"
        file.write(line)
    file.close()
    return list_of_rows, 'Success'
```

Figure 1: Add, Remove, & Write Functions

IO Class

The IO class in the meantime was the easiest to implement of the two classes. Both input_new_task_and_priority() & input_task_to_remove() prompted the user for inputs and returned the strings that would be be used in the Processor Class's add & remove functions.



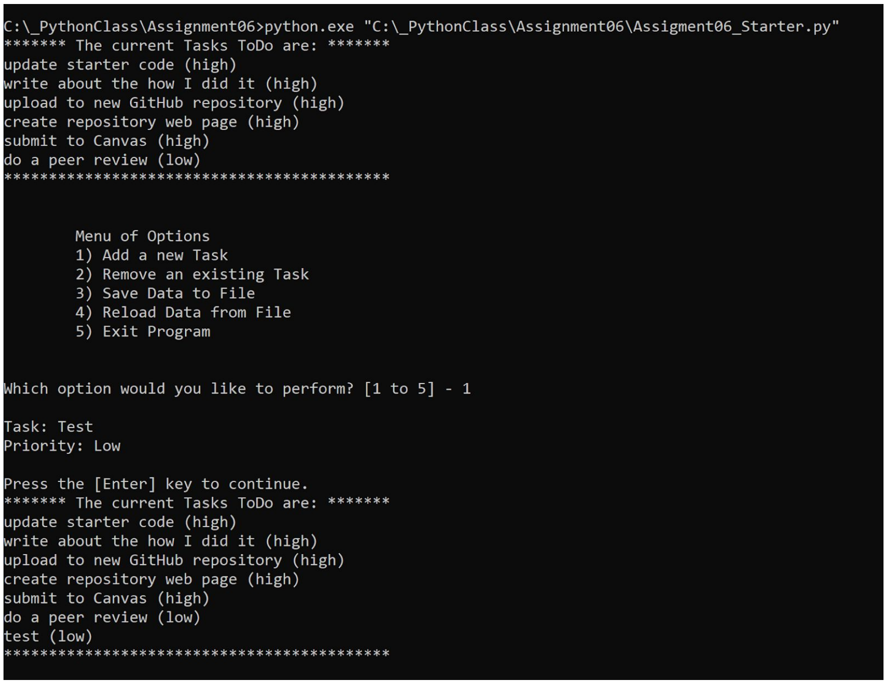
```
@staticmethod
def input_new_task_and_priority():
    task = input("Task: ")
    priority = input("Priority: ")
    return task.strip(), priority.strip()

@staticmethod
def input_task_to_remove():
    task = input("Task: ")
    return task.strip()
```

Figure 2: input add & remove functions

Testing

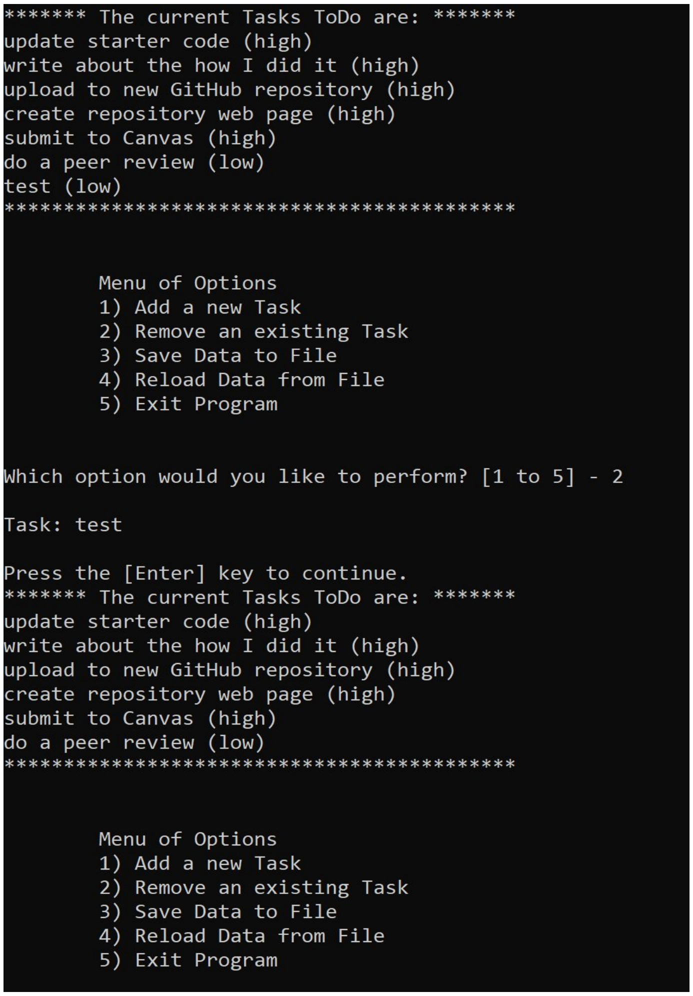
Testing was done in PyCharm and standard Windows Command Prompt shell. As like the previous python assignments the real test was done in Shell.

Testing for adding and removing an entry was done using the default To-Do list provided from canvas. An entry made up of a 'test' task and 'low' priority was added and then removed from the list in shell (Figures 3 & 4).



```
C:\_PythonClass\Assignment06>python.exe "C:\_PythonClass\Assignment06\Assigment06_Starter.py"
******* The current Tasks ToDo are: *******
update starter code (high)
write about the how I did it (high)
upload to new GitHub repository (high)
create repository web page (high)
submit to Canvas (high)
do a peer review (low)
*******************************************


        Menu of Options
        1) Add a new Task
        2) Remove an existing Task
        3) Save Data to File
        4) Reload Data from File
        5) Exit Program


Which option would you like to perform? [1 to 5] - 1

Task: Test
Priority: Low

Press the [Enter] key to continue.
******* The current Tasks ToDo are: *******
update starter code (high)
write about the how I did it (high)
upload to new GitHub repository (high)
create repository web page (high)
submit to Canvas (high)
do a peer review (low)
test (low)
*******************************************
```

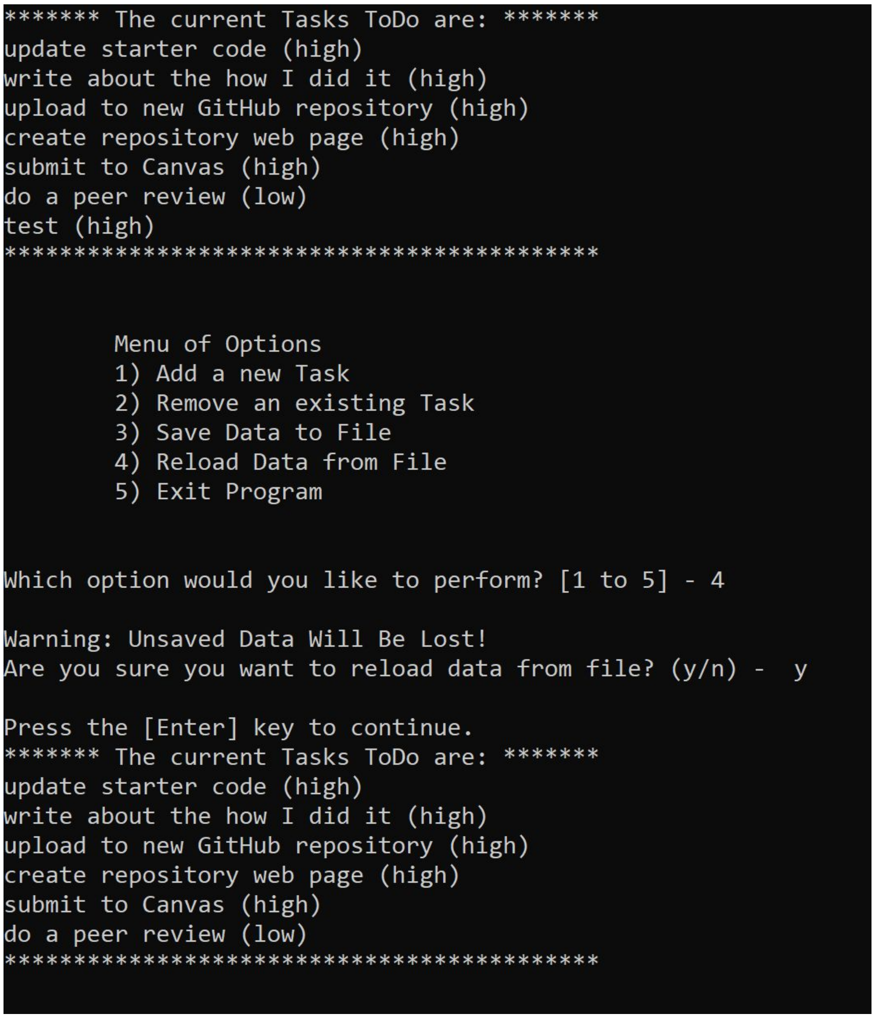
Figure 3: Addition Test



```
******* The current Tasks ToDo are: *******
update starter code (high)
write about the how I did it (high)
upload to new GitHub repository (high)
create repository web page (high)
submit to Canvas (high)
do a peer review (low)
test (low)
*******************************************


        Menu of Options
        1) Add a new Task
        2) Remove an existing Task
        3) Save Data to File
        4) Reload Data from File
        5) Exit Program


Which option would you like to perform? [1 to 5] - 2

Task: test

Press the [Enter] key to continue.
******* The current Tasks ToDo are: *******
update starter code (high)
write about the how I did it (high)
upload to new GitHub repository (high)
create repository web page (high)
submit to Canvas (high)
do a peer review (low)
*******************************************


        Menu of Options
        1) Add a new Task
        2) Remove an existing Task
        3) Save Data to File
        4) Reload Data from File
        5) Exit Program
```

Figure 4: Removal Test

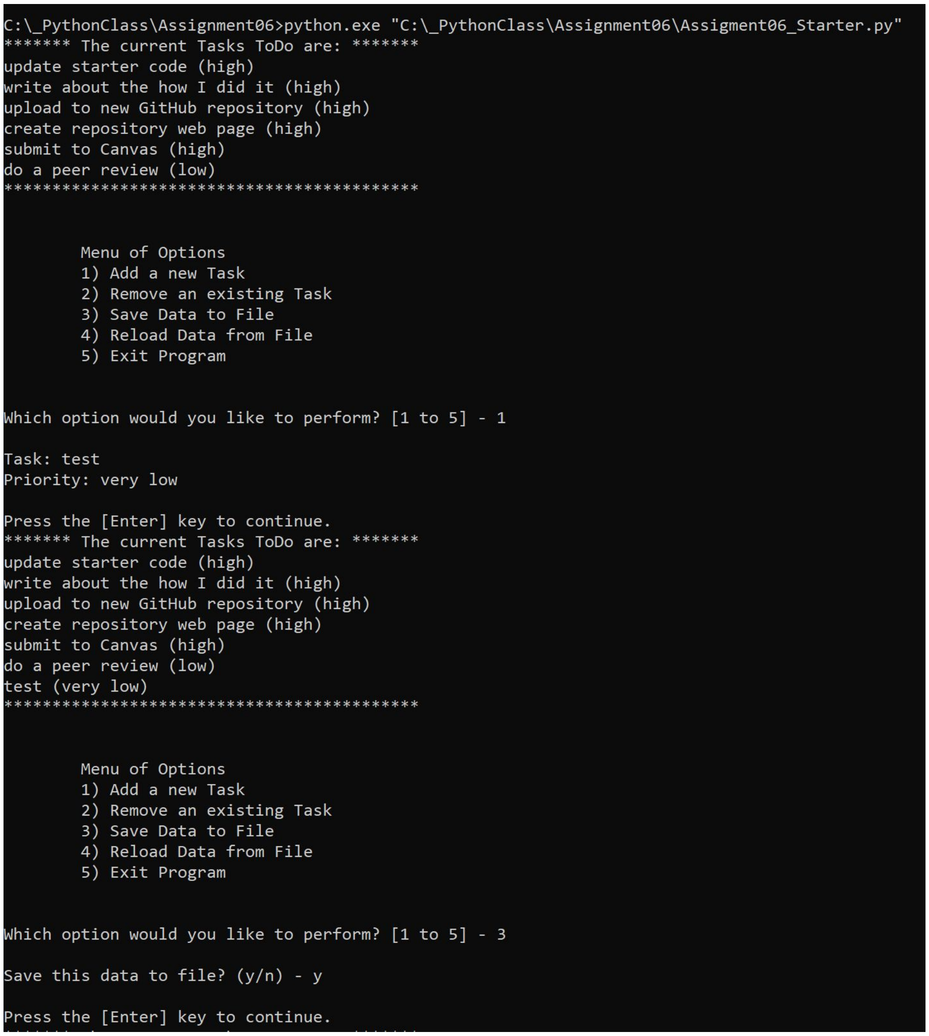
A load test was done using the default To-Do list that had another ‘test’ entry added during runtime that was NOT saved beforehand. When the load option was selected the list was refreshed to show the original To-Do list (Figure 5).



```
******* The current Tasks ToDo are: *******
update starter code (high)
write about the how I did it (high)
upload to new GitHub repository (high)
create repository web page (high)
submit to Canvas (high)
do a peer review (low)
test (high)
*******************************************


        Menu of Options
        1) Add a new Task
        2) Remove an existing Task
        3) Save Data to File
        4) Reload Data from File
        5) Exit Program


Which option would you like to perform? [1 to 5] - 4

Warning: Unsaved Data Will Be Lost!
Are you sure you want to reload data from file? (y/n) -  y

Press the [Enter] key to continue.
******* The current Tasks ToDo are: *******
update starter code (high)
write about the how I did it (high)
upload to new GitHub repository (high)
create repository web page (high)
submit to Canvas (high)
do a peer review (low)
*******************************************
```

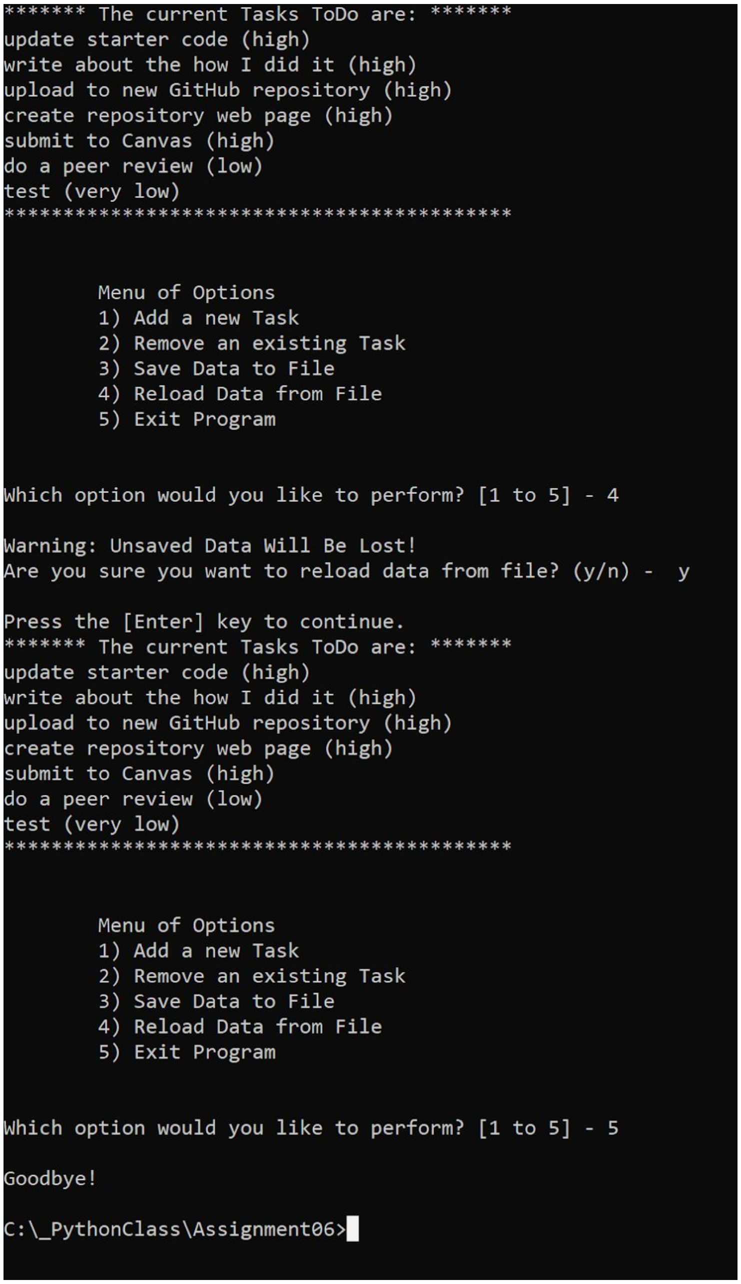
Figure 5: Load Test

The Save Test was the opposite. Like before a ‘test’ entry was added and THEN saved. When the Load option was selected the list was refreshed and showed that the test entry had been preserved (Figures 6 & 7).



```
C:\_PythonClass\Assignment06>python.exe "C:\_PythonClass\Assignment06\Assigment06_Starter.py"
******* The current Tasks ToDo are: *******
update starter code (high)
write about the how I did it (high)
upload to new GitHub repository (high)
create repository web page (high)
submit to Canvas (high)
do a peer review (low)
*******************************************


        Menu of Options
        1) Add a new Task
        2) Remove an existing Task
        3) Save Data to File
        4) Reload Data from File
        5) Exit Program


Which option would you like to perform? [1 to 5] - 1

Task: test
Priority: very low

Press the [Enter] key to continue.
******* The current Tasks ToDo are: *******
update starter code (high)
write about the how I did it (high)
upload to new GitHub repository (high)
create repository web page (high)
submit to Canvas (high)
do a peer review (low)
test (very low)
*******************************************


        Menu of Options
        1) Add a new Task
        2) Remove an existing Task
        3) Save Data to File
        4) Reload Data from File
        5) Exit Program


Which option would you like to perform? [1 to 5] - 3

Save this data to file? (y/n) - y

Press the [Enter] key to continue.
```

Figure 6: Save Test (Item saved to file)



```
******* The current Tasks ToDo are: *******
update starter code (high)
write about the how I did it (high)
upload to new GitHub repository (high)
create repository web page (high)
submit to Canvas (high)
do a peer review (low)
test (very low)
*******************************************


        Menu of Options
        1) Add a new Task
        2) Remove an existing Task
        3) Save Data to File
        4) Reload Data from File
        5) Exit Program


Which option would you like to perform? [1 to 5] - 4

Warning: Unsaved Data Will Be Lost!
Are you sure you want to reload data from file? (y/n) -  y

Press the [Enter] key to continue.
******* The current Tasks ToDo are: *******
update starter code (high)
write about the how I did it (high)
upload to new GitHub repository (high)
create repository web page (high)
submit to Canvas (high)
do a peer review (low)
test (very low)
*******************************************


        Menu of Options
        1) Add a new Task
        2) Remove an existing Task
        3) Save Data to File
        4) Reload Data from File
        5) Exit Program


Which option would you like to perform? [1 to 5] - 5

Goodbye!

C:\_PythonClass\Assignment06>
```

Figure 7: Save Test (Saved Item loaded)

Summary

Reading about functions and classes has led me to understand their use in Python programming. The larger the script the more complicated it is and functions and classes are a go-to option for making it smaller and more readable. If I had more time I would separate both the IO and Processor classes into separate files and left the Assignment06_Starter to solely deal with data and the menu.