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Course: Foundations of Programming: Python
Assignment: Document Your Knowledge – Module06 – Functions
GitHubULR: https://github.com/stepaidzzz/IntroToProg-Python-Mod06

Document Your Knowledge – Module06 – Functions

Introduction

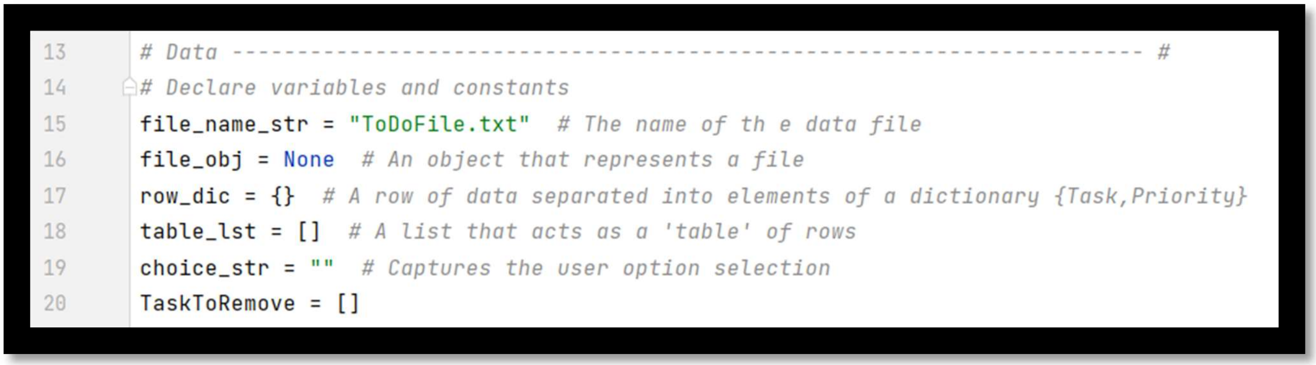
In Module06 – Functions, utilizing an assignment that is similar to Assignment05, the main focus of this assignment is to be able to use functions embedded in different classes! Oh my god!

Getting Started

Assignment06_Starter.py has been provided as a base. Script is then built on top of the starter.py. The starter.py reinforces a standard format and serves as a template for Assignment06. Within the starter.py, headers, pseudo codes, etc. have already been included which has significantly reduced duplication of work as well as providing structure to the script.

Defining Variables

Variables in the starter.py have already predefined as shown in Figure #1:



```
# Data -------------------------------------------------------------------- #
# Declare variables and constants
file_name_str = "ToDoFile.txt"  # The name of th e data file
file_obj = None  # An object that represents a file
row_dic = {}  # A row of data separated into elements of a dictionary {Task,Priority}
table_lst = []  # A list that acts as a 'table' of rows
choice_str = ""  # Captures the user option selection
TaskToRemove = []
```

Figure #1

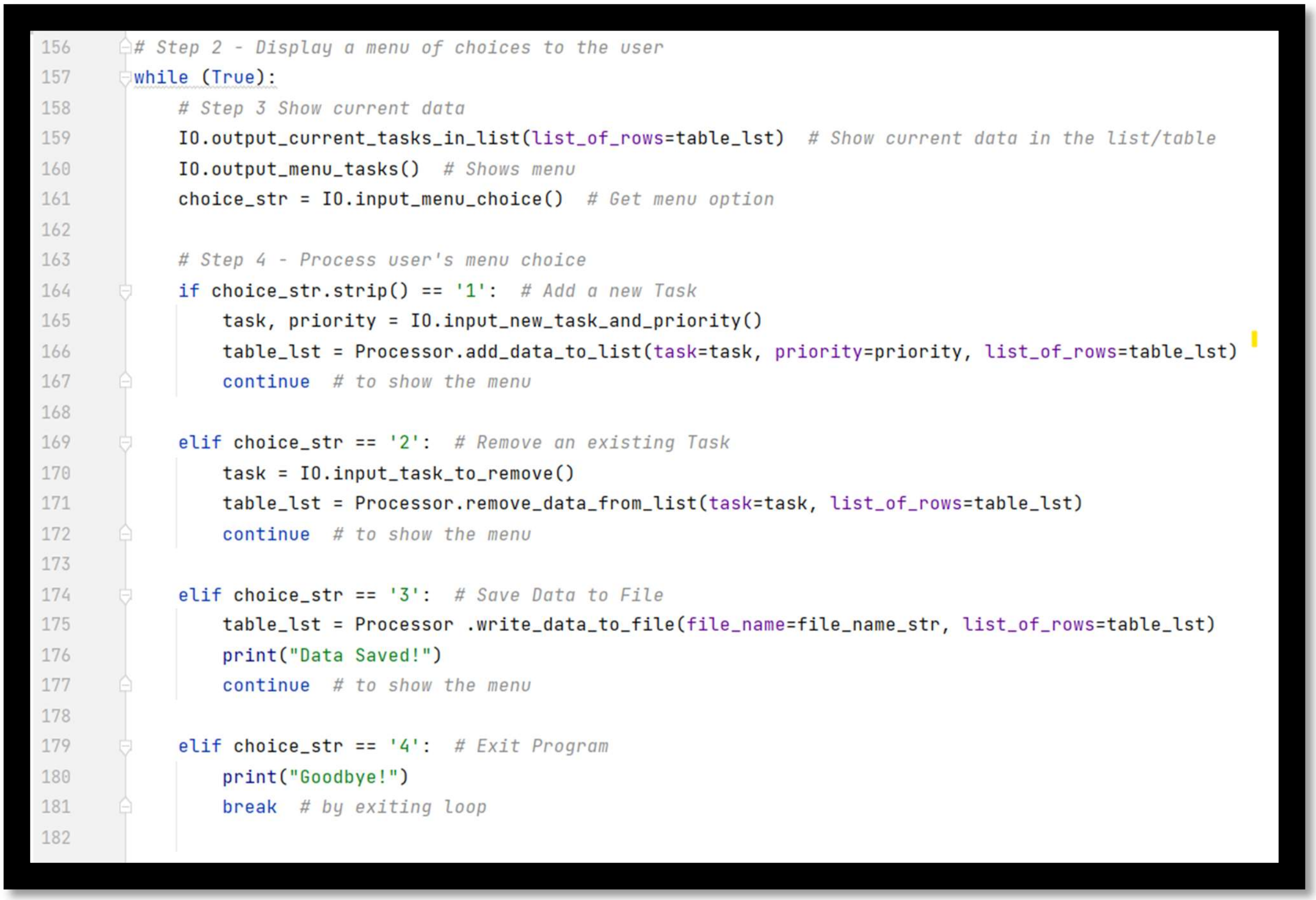
For this assignment, TaskToRemove = [] has been added.

Separation of Concerns

The idea of separation of concerns is introduced during Module05. In Assignment06, the idea of separation of concerns is reinforced. The script is divided into Data, Processing, and Input-Output sections.

While Loop and If…elif Statement

Being our favorite, in Assignment06, while look and if elif statements are again utilized for the logical flow of the script and the loop is ended with a “break” command at the very bottom as shown in Figure #2:



```
156  # Step 2 - Display a menu of choices to the user
157  while (True):
158      # Step 3 Show current data
159      IO.output_current_tasks_in_list(list_of_rows=table_lst)  # Show current data in the list/table
160      IO.output_menu_tasks()  # Shows menu
161      choice_str = IO.input_menu_choice()  # Get menu option
162
163      # Step 4 - Process user's menu choice
164      if choice_str.strip() == '1':  # Add a new Task
165          task, priority = IO.input_new_task_and_priority()
166          table_lst = Processor.add_data_to_list(task=task, priority=priority, list_of_rows=table_lst)
167          continue  # to show the menu
168
169      elif choice_str == '2':  # Remove an existing Task
170          task = IO.input_task_to_remove()
171          table_lst = Processor.remove_data_from_list(task=task, list_of_rows=table_lst)
172          continue  # to show the menu
173
174      elif choice_str == '3':  # Save Data to File
175          table_lst = Processor .write_data_to_file(file_name=file_name_str, list_of_rows=table_lst)
176          print("Data Saved!")
177          continue  # to show the menu
178
179      elif choice_str == '4':  # Exit Program
180          print("Goodbye!")
181          break  # by exiting loop
182
```

Figure #2

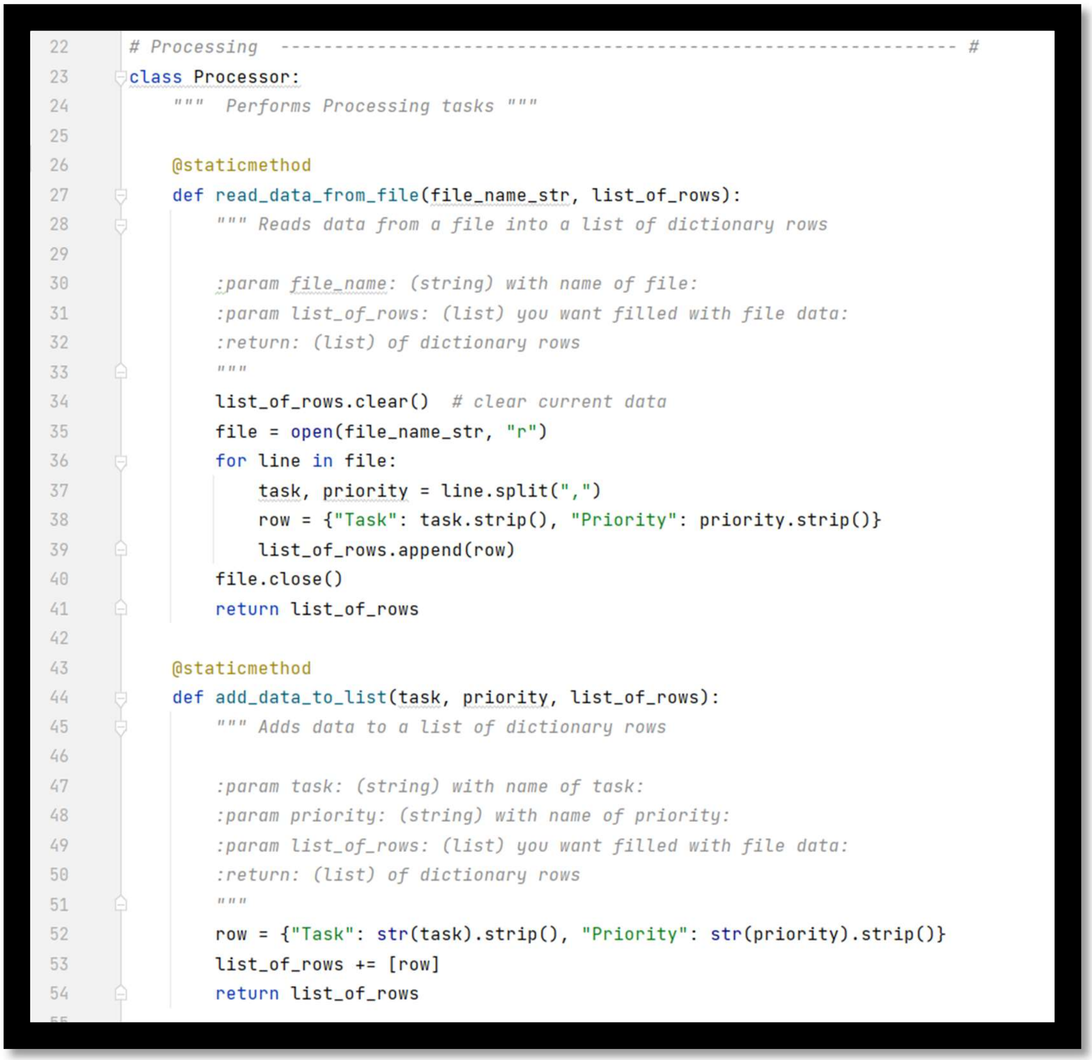
In order to call functions in different classes, “IO.out_current_tasks_in_list” has been used. So, a class name and a function are separated by a period. This is called drilling into class”.

The most difficult part is to understand the syntax of such an action.
For example:
From row 166
`table_lst = Processor.add_data_to_list(task=task, priority=priority, list_of_rows=table_lst)`
The purpose and logic behind `(task=task, priority=priority, list_of_rows=table_lst)` is yet to be looked into.
Similar question for row 171 and row 175.

Also, still not seeing how table_lst comes into play all of a sudden in main body of script.

Class, functions, return of value

In “Processing” section, one of the classes of Assignment06 is named “Processor”. Within class “Processor”, functions “read_data_from_file”, “add_data_to_list”, etc are found underneath. Different functions are denoted with “@staticmethod” as shown in Figure #3:



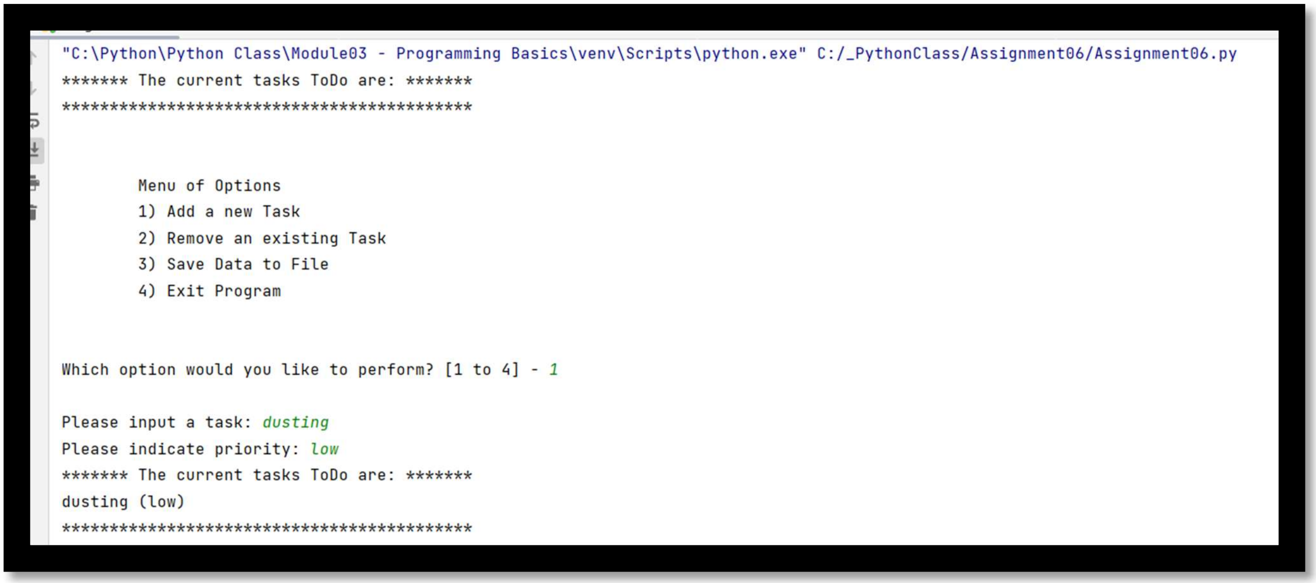
```python
# Processing  --------------------------------------------------------------- #
class Processor:
    """  Performs Processing tasks """

    @staticmethod
    def read_data_from_file(file_name_str, list_of_rows):
        """ Reads data from a file into a list of dictionary rows

        :param file_name: (string) with name of file:
        :param list_of_rows: (list) you want filled with file data:
        :return: (list) of dictionary rows
        """
        list_of_rows.clear()  # clear current data
        file = open(file_name_str, "r")
        for line in file:
            task, priority = line.split(",")
            row = {"Task": task.strip(), "Priority": priority.strip()}
            list_of_rows.append(row)
        file.close()
        return list_of_rows

    @staticmethod
    def add_data_to_list(task, priority, list_of_rows):
        """ Adds data to a list of dictionary rows

        :param task: (string) with name of task:
        :param priority: (string) with name of priority:
        :param list_of_rows: (list) you want filled with file data:
        :return: (list) of dictionary rows
        """
        row = {"Task": str(task).strip(), "Priority": str(priority).strip()}
        list_of_rows += [row]
        return list_of_rows
```

Figure #3

Again, there are rows with syntax I do not quite understand…

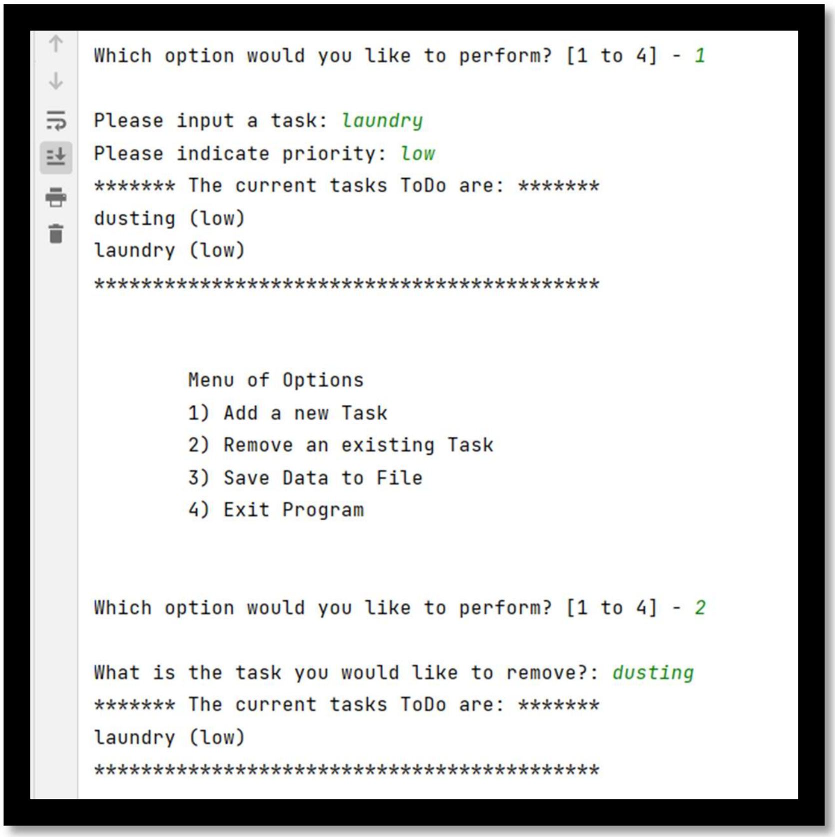
Run/Test/Debut the Script

When the script is ready, it is being tested in PyCharm by running the script as shown in Figure #4 to Figure # shown below:



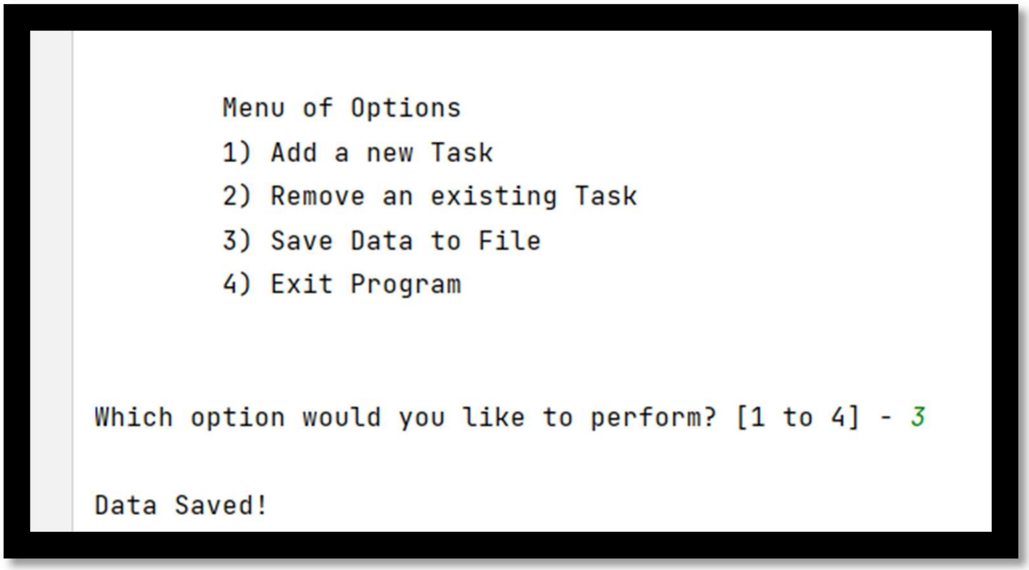
```
"C:\Python\Python Class\Module03 - Programming Basics\venv\Scripts\python.exe" C:/_PythonClass/Assignment06/Assignment06.py
******* The current tasks ToDo are: *******
*******************************************



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


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

Please input a task: dusting
Please indicate priority: low
******* The current tasks ToDo are: *******
dusting (low)
*******************************************
```

Figure #4 – Adding task



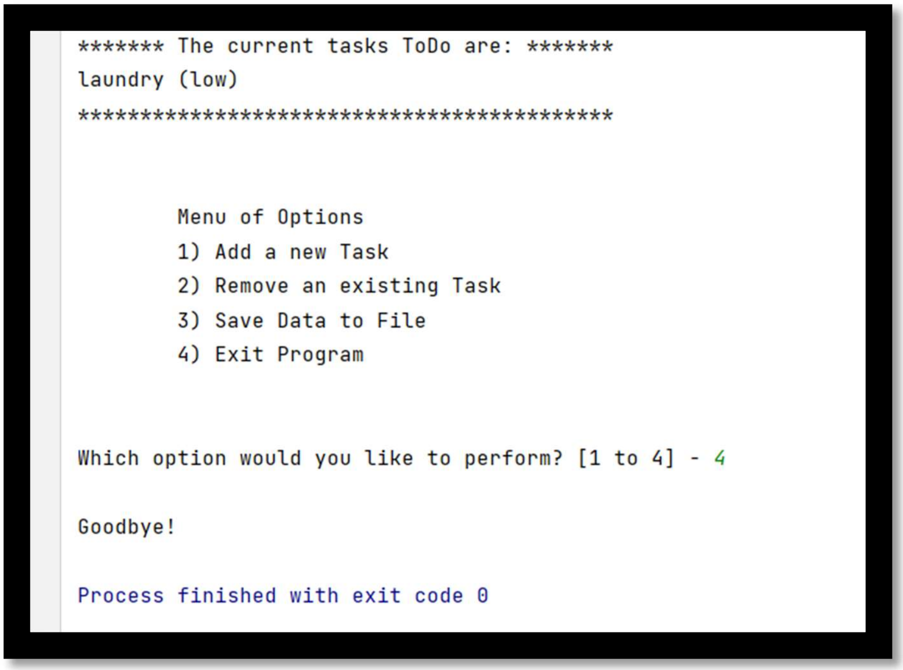
```
Which option would you like to perform? [1 to 4] - 1

Please input a task: laundry
Please indicate priority: low
******* The current tasks ToDo are: *******
dusting (low)
laundry (low)
*******************************************



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


Which option would you like to perform? [1 to 4] - 2

What is the task you would like to remove?: dusting
******* The current tasks ToDo are: *******
laundry (low)
*******************************************
```

Figure #5 – Remove a selected task



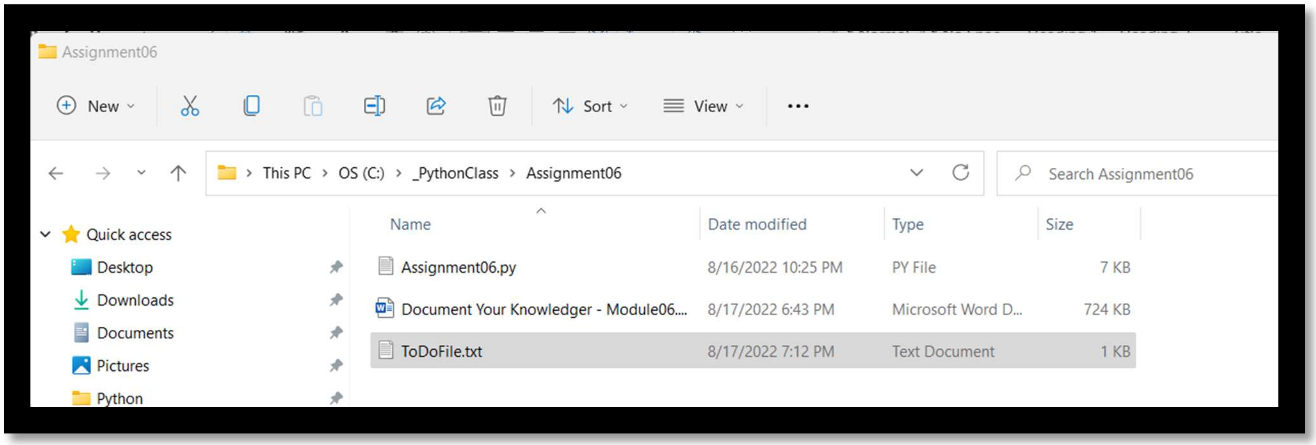
```
        Menu of Options
        1) Add a new Task
        2) Remove an existing Task
        3) Save Data to File
        4) Exit Program


Which option would you like to perform? [1 to 4] - 3

Data Saved!
```

Figure #6 – Save data to a text file



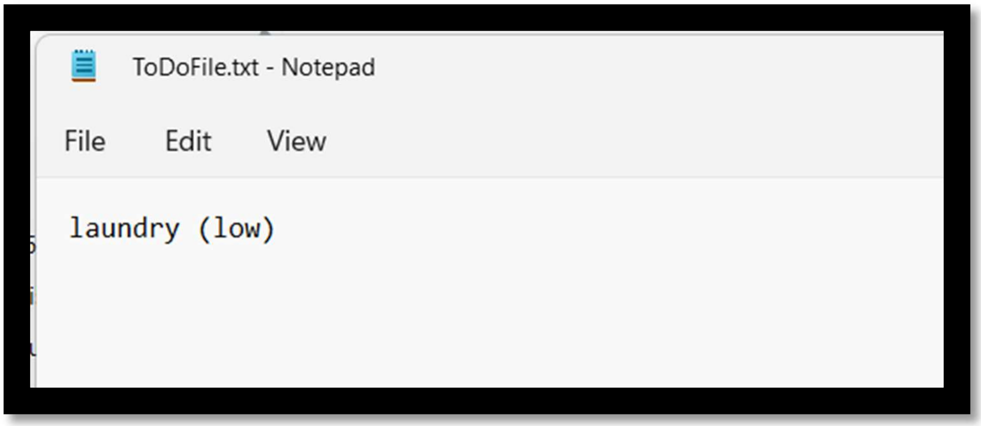
```
******* The current tasks ToDo are: *******
laundry (low)
*******************************************



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


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

Goodbye!

Process finished with exit code 0
```

Figure #7 – Exit the script



Name	Date modified	Type	Size
Assignment06.py	8/16/2022 10:25 PM	PY File	7 KB
Document Your Knowledger - Module06....	8/17/2022 6:43 PM	Microsoft Word D...	724 KB
ToDoFile.txt	8/17/2022 7:12 PM	Text Document	1 KB

Figure #8 – A ToDoFile.txt is added



```
laundry (low)
```

Figure #9 – A task input previously is found in ToDoFile.txt

Conclusion

During Module06, functions and classes are being incorporated into the script. In referencing Demo2, Demo3, and Demo4 (but not the pdf document), miraculously the script is working. But I highly doubt my ability to come up with the script from scratch on my own.