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Foundations in Programming: Python

Assignment05

To Do List Python Script

Introduction

In this assignment, I created a python script that first ingests an existing .txt file, then allows the user to choose from a menu of options to 1) see the list of items that came from the existing .txt file, 2) add more to-do items to the list, 3) remove items from the list, 4) save the file, or 5) exit out of the program.

Step 1: Writing the Python Script

The first step was to copy the partially complete starter python script into PyCharm, then fill in the missing pieces so it would properly execute the steps indicated. The script starts by declaring the variables that will used throughout the script. I modified a few of the existing variables and added a couple new ones based on the code I used throughout the program.

The program then opens an existing .txt file, reading its contents into a list within python. I did this by using a 'for' loop so that for every row in the .txt file, the program would create a new dictionary row containing the 'task' and corresponding 'priority,' then append that dictionary row to a list.

The next portion of the code presents the user with a menu of five options (outlined above) and takes their input.

If the user selects option one, I used another 'for' loop to cycle through the list initially created from the existing .txt file contents and print each of the dictionary rows.

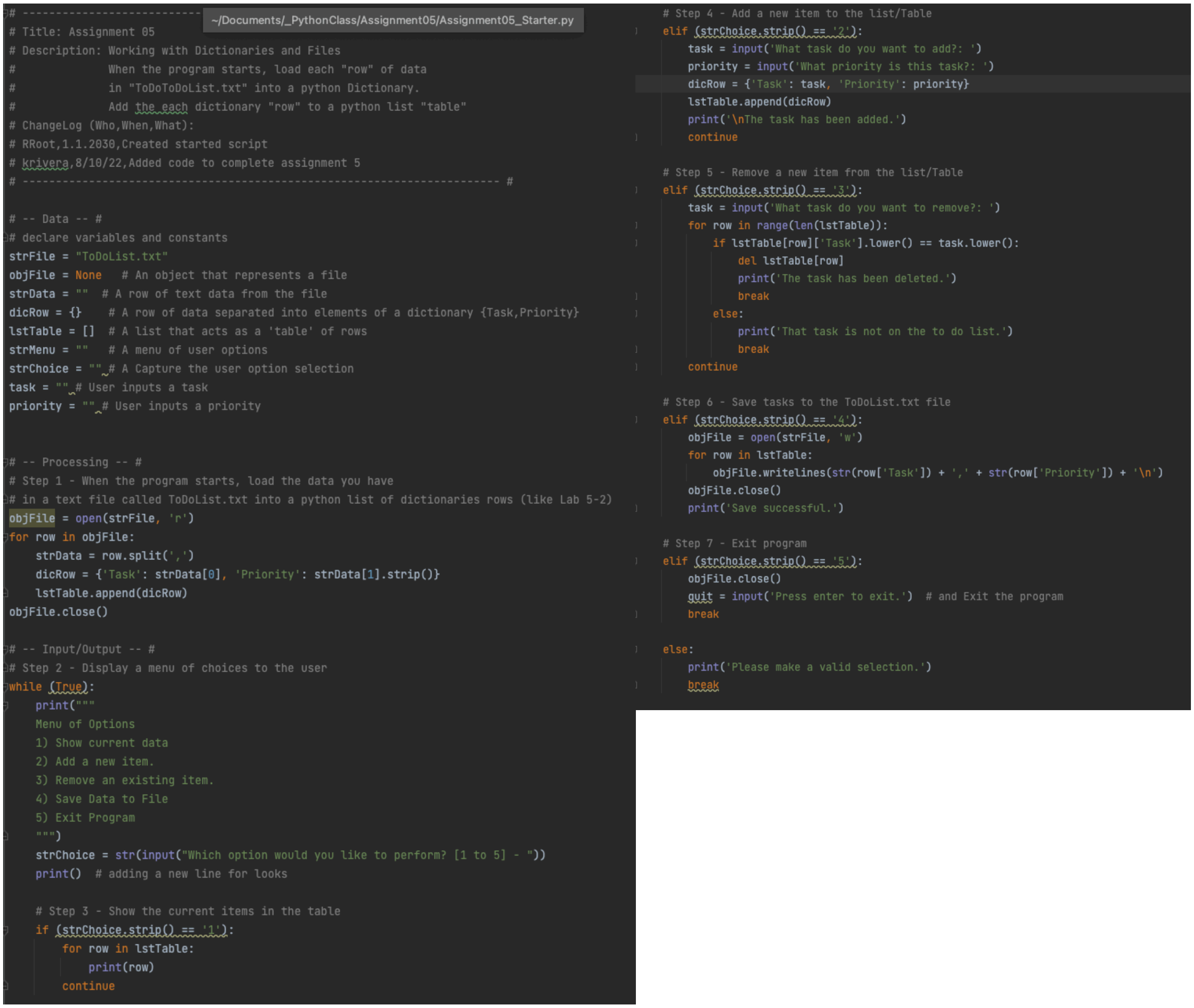
If the user selects option two, the program asks the user to provide the name of the task they want to add, then provide the priority of that task. It then creates a new dictionary row using the inputs provided by the user in the 'task' : 'priority' format. This allows the dictionary row then be appended to the existing list of to-do items. The user is also notified that their task was successfully added.

If the user selects option three, the program asks the user which task they want to remove from the list. Using another 'for' loop to cycle through each of the dictionary rows in the list, the program then utilizes an embedded 'if, else' statement to determine whether the input that the user provided matches any of the tasks that are already in the list. If it does, the program deletes that task. However, if that task isn't in the existing list, the program tells the user the task was not found.

If the user selects option four, the program opens the .txt file that was originally read into python and indicates that the contents will be written over. With a 'for' loop, the program cycles through each of the dictionary rows in the final list and writes them to the .txt file using the same format they were in originally. This will ensure that when the program is run again, it will be able to read the updated list into a list properly. The .txt file is then closed and the user is notified that the save was successful.

If the user selects option five, the program simply closes the .txt file and lets the user know they can exit by pressing 'enter.'

Lastly, I utilized a final ‘else’ statement to capture any invalid entries the user might provide. If they do not select an option 1-5, they will be notified their entry was not valid and prompted to select a valid option.

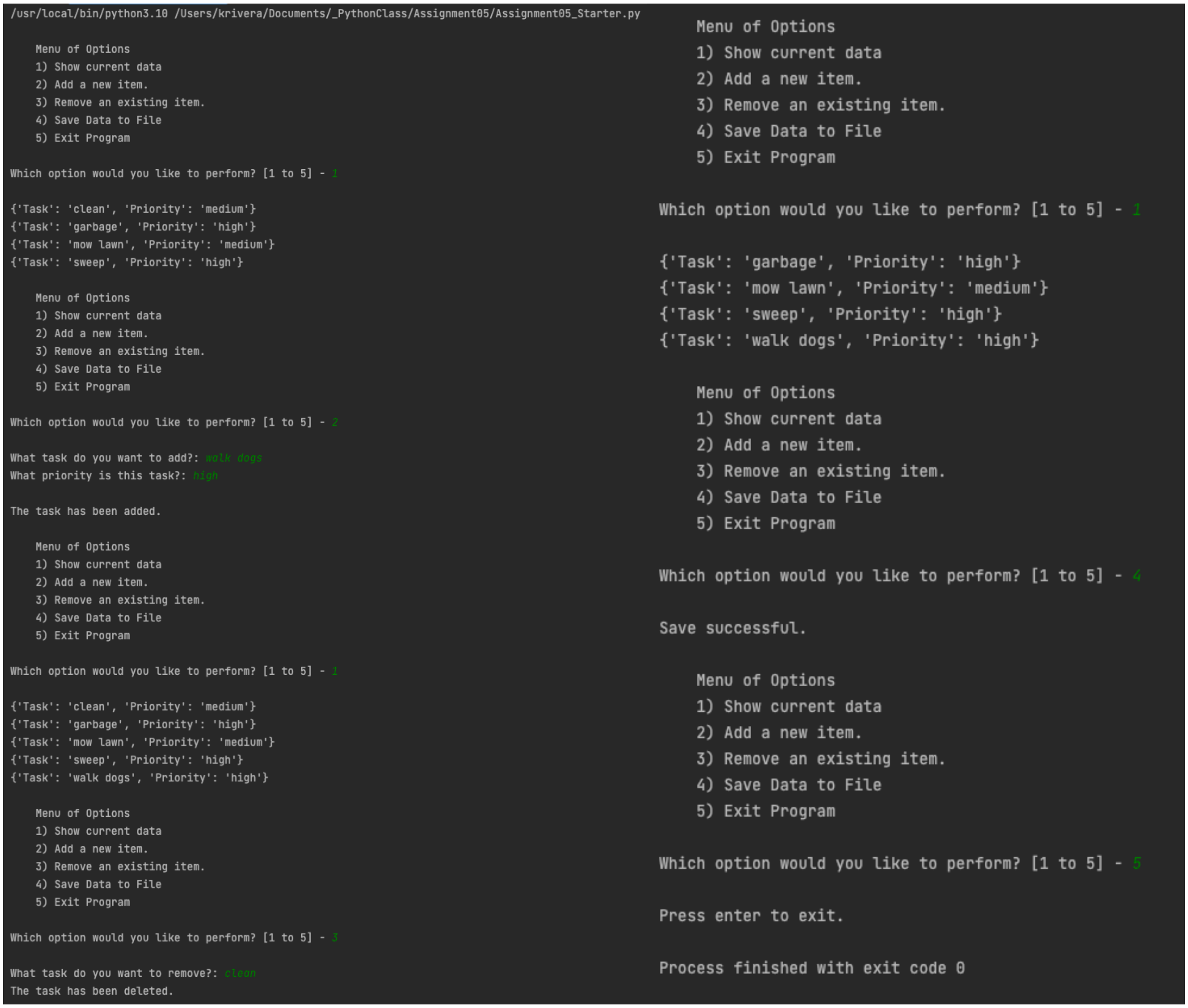

~/Documents/_PythonClass/Assignment05/Assignment05_Starter.py

```python
# ---------------------------
# Title: Assignment 05
# Description: Working with Dictionaries and Files
#              When the program starts, load each "row" of data
#              in "ToDoToDoList.txt" into a python Dictionary.
#              Add the each dictionary "row" to a python list "table"
# ChangeLog (Who,When,What):
# RRoot,1.1.2030,Created started script
# krivera,8/10/22,Added code to complete assignment 5
# ------------------------------------------------------------------------ #

# -- Data -- #
# declare variables and constants
strFile = "ToDoList.txt"
objFile = None   # An object that represents a file
strData = ""  # A row of text data from the file
dicRow = {}    # A row of data separated into elements of a dictionary {Task,Priority}
lstTable = []  # A list that acts as a 'table' of rows
strMenu = ""   # A menu of user options
strChoice = ""# A Capture the user option selection
task = ""# User inputs a task
priority = ""# User inputs a priority


# -- Processing -- #
# Step 1 - When the program starts, load the data you have
# in a text file called ToDoList.txt into a python list of dictionaries rows (like Lab 5-2)
objFile = open(strFile, 'r')
for row in objFile:
    strData = row.split(',')
    dicRow = {'Task': strData[0], 'Priority': strData[1].strip()}
    lstTable.append(dicRow)
objFile.close()

# -- Input/Output -- #
# Step 2 - Display a menu of choices to the user
while (True):
    print("""
    Menu of Options
    1) Show current data
    2) Add a new item.
    3) Remove an existing item.
    4) Save Data to File
    5) Exit Program
    """)
    strChoice = str(input("Which option would you like to perform? [1 to 5] - "))
    print()  # adding a new line for looks

    # Step 3 - Show the current items in the table
    if (strChoice.strip() == '1'):
        for row in lstTable:
            print(row)
        continue
    # Step 4 - Add a new item to the list/Table
    elif (strChoice.strip() == '2'):
        task = input('What task do you want to add?: ')
        priority = input('What priority is this task?: ')
        dicRow = {'Task': task, 'Priority': priority}
        lstTable.append(dicRow)
        print('\nThe task has been added.')
        continue

    # Step 5 - Remove a new item from the list/Table
    elif (strChoice.strip() == '3'):
        task = input('What task do you want to remove?: ')
        for row in range(len(lstTable)):
            if lstTable[row]['Task'].lower() == task.lower():
                del lstTable[row]
                print('The task has been deleted.')
                break
            else:
                print('That task is not on the to do list.')
                break
        continue

    # Step 6 - Save tasks to the ToDoList.txt file
    elif (strChoice.strip() == '4'):
        objFile = open(strFile, 'w')
        for row in lstTable:
            objFile.writelines(str(row['Task']) + ',' + str(row['Priority']) + '\n')
        objFile.close()
        print('Save successful.')

    # Step 7 - Exit program
    elif (strChoice.strip() == '5'):
        objFile.close()
        quit = input('Press enter to exit.')  # and Exit the program
        break

    else:
        print('Please make a valid selection.')
        break
```

Figure 1. Python script written in PyCharm.

Step 2: Using PyCharm to Run the Script

The next step was to run the script using PyCharm (Figure 2). The program first provided a menu of five options and asked me to pick one. My first selection was option one, which showed me the list of items that were found on the .txt file when it was opened. I then selected option two from the menu, to which the program then asked me to enter a task and priority for the new item. To confirm that my task had been added correctly, I then selected option one again to view the list of to-dos. Next, I picked option three to remove a task from the list. When prompted, I entered ‘clean’ to remove that item from the list. Again, I selected option one to confirm that the list was properly edited, which it was. After making those edits, I decided to select option four and save the updated list. After that, I picked option five and I ended the program.



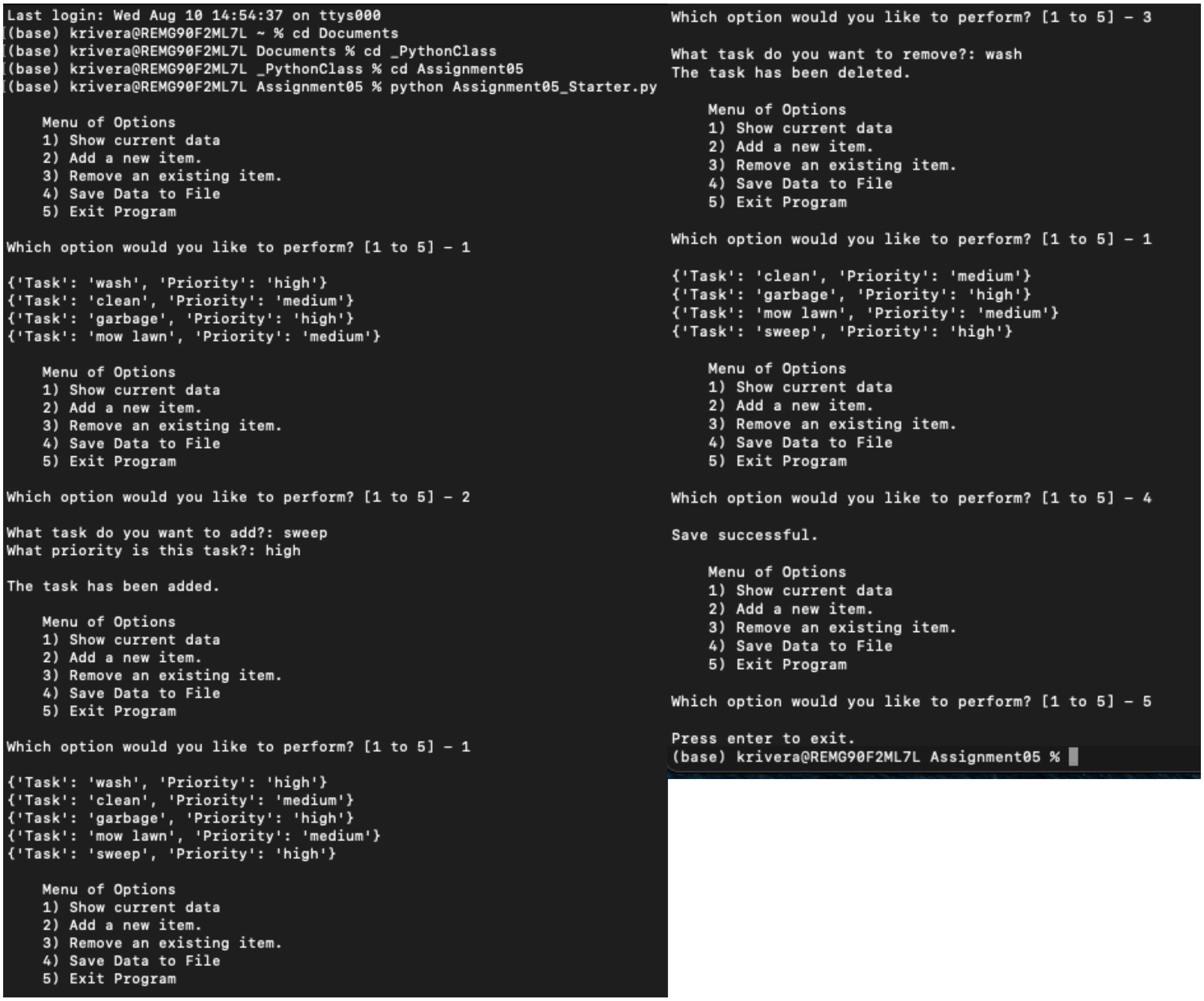
```
/usr/local/bin/python3.10 /Users/krivera/Documents/_PythonClass/Assignment05/Assignment05_Starter.py

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

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

{'Task': 'clean', 'Priority': 'medium'}
{'Task': 'garbage', 'Priority': 'high'}
{'Task': 'mow lawn', 'Priority': 'medium'}
{'Task': 'sweep', 'Priority': 'high'}

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

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

What task do you want to add?: walk dogs
What priority is this task?: high

The task has been added.

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

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

{'Task': 'clean', 'Priority': 'medium'}
{'Task': 'garbage', 'Priority': 'high'}
{'Task': 'mow lawn', 'Priority': 'medium'}
{'Task': 'sweep', 'Priority': 'high'}
{'Task': 'walk dogs', 'Priority': 'high'}

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

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

What task do you want to remove?: clean
The task has been deleted.
```

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

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

{'Task': 'garbage', 'Priority': 'high'}
{'Task': 'mow lawn', 'Priority': 'medium'}
{'Task': 'sweep', 'Priority': 'high'}
{'Task': 'walk dogs', 'Priority': 'high'}

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

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

Save successful.

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

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

Press enter to exit.

Process finished with exit code 0
```

Figure 2. Running the script using PyCharm.

Step 3: Using the Terminal to Run the Python Script

The final step was to run the script using the terminal app. I first used the change directory (“cd”) command to navigate to my file (Documents > _PythonClass > Assignment05). Once in the proper folder, I ran the command “python Assignment05_Starter.py” to begin executing the script. I followed the prompts to provide add a new to-do and remove an existing one and was able to see the appropriate output. I then saved the updated list to the .txt file, then I exited the program.

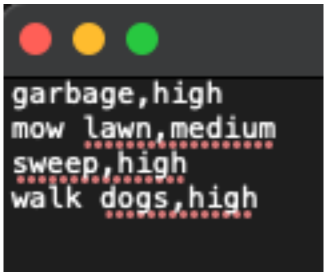


```
Last login: Wed Aug 10 14:54:37 on ttys000
[(base) krivera@REMG90F2ML7L ~ % cd Documents
[(base) krivera@REMG90F2ML7L Documents % cd _PythonClass
[(base) krivera@REMG90F2ML7L _PythonClass % cd Assignment05
[(base) krivera@REMG90F2ML7L Assignment05 % python Assignment05_Starter.py

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

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

{'Task': 'wash', 'Priority': 'high'}
{'Task': 'clean', 'Priority': 'medium'}
{'Task': 'garbage', 'Priority': 'high'}
{'Task': 'mow lawn', 'Priority': 'medium'}

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

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

What task do you want to add?: sweep
What priority is this task?: high

The task has been added.

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

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

{'Task': 'wash', 'Priority': 'high'}
{'Task': 'clean', 'Priority': 'medium'}
{'Task': 'garbage', 'Priority': 'high'}
{'Task': 'mow lawn', 'Priority': 'medium'}
{'Task': 'sweep', 'Priority': 'high'}

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

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

What task do you want to remove?: wash
The task has been deleted.

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

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

{'Task': 'clean', 'Priority': 'medium'}
{'Task': 'garbage', 'Priority': 'high'}
{'Task': 'mow lawn', 'Priority': 'medium'}
{'Task': 'sweep', 'Priority': 'high'}

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

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

Save successful.

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

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

Press enter to exit.
(base) krivera@REMG90F2ML7L Assignment05 %
```

Figure 4. Using the terminal to execute the python script.

I then checked the ToDoList.txt file to ensure the edits I made by running the script in the terminal app were captured correctly (Figure 5).



```
garbage,high
mow lawn,medium
sweep,high
walk dogs,high
```

Figure 5. HomeInventory.txt file correctly logging my submissions from the terminal app.

Summary

Through this assignment, I was able to import an existing file and format it into a list in python, which enabled me to make edits to the list before saving it back to the .txt file. Parts of this assignment were very familiar and easy to get through, however, other portions such step five (figuring out how to delete an item from the list) were more challenging and required me to do research outside of the course materials. I was also initially unsure exactly what format the to-do items should be in - dictionary ‘{ }’ or list ‘[ ]’ - so that required me to re-work the code a couple times as well. Ultimately, this assignment provided a good opportunity to practice new challenges, despite the initial issues.