Cameron Mathews
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IT FDN 110 A Su 21
Assignment06
https://github.com/cmathews10/IntroToProg-Python-Mod06.git

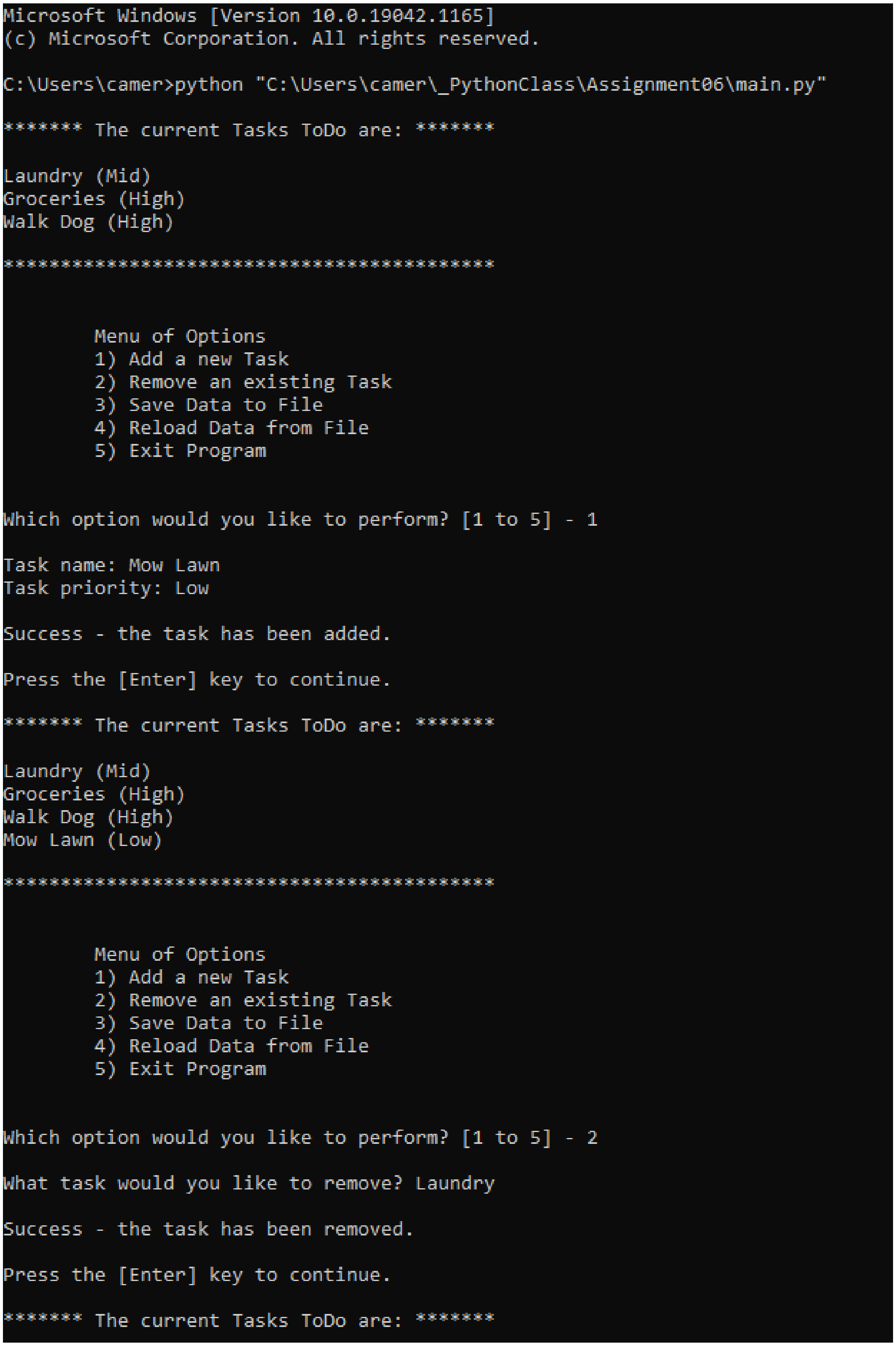
Modifying an Existing To-Do List Script and Adding Functions

Introduction

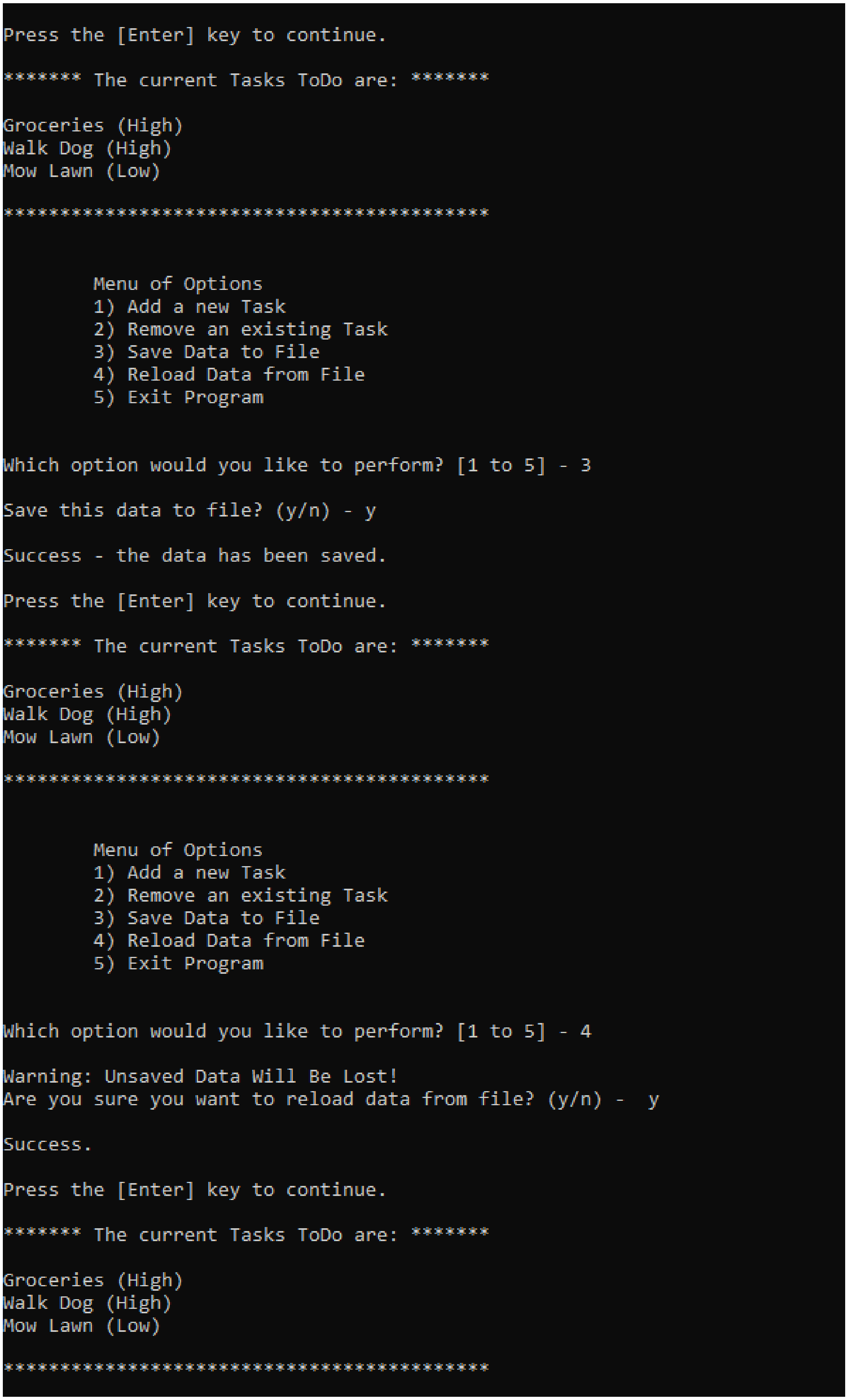
The following document outlines the steps taken to modify and update a Python script written by a different author with additional functions that will allow a user to select from a menu of options to input to-do list items and their associated priority level, edit the list, and store the input data into a text file.

Process

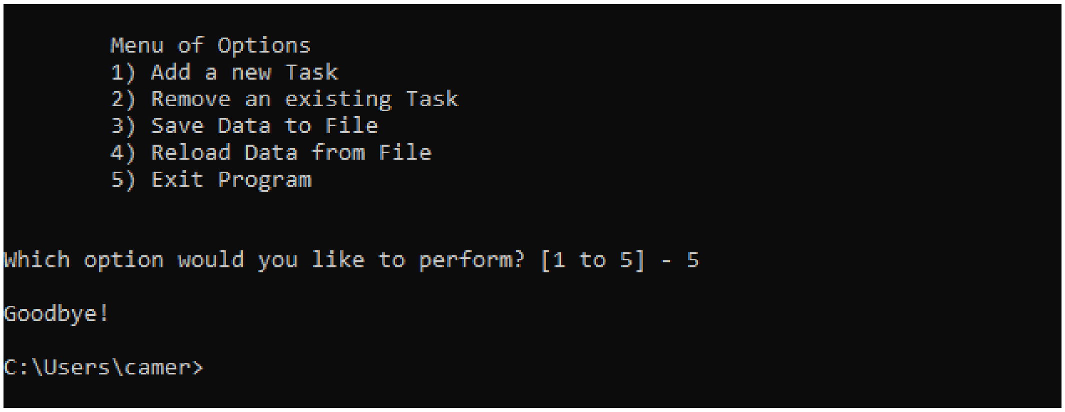
1. Write the script in PyCharm (Appendix A).
    a. I found it more difficult to find the right locations to edit the formatting based on someone else's code.
    b. It was difficult to determine if it was worth spending time to edit parts of the code that would have no functional output difference based on personal preference.
    c. This assignment felt easier after working through corrections to the prior assignment, though I still feel confused on when to use tables, lists, dictionaries, etc. and need to spend more time researching these items.
2. Run the script in PyCharm (Appendix B).
3. Run the script in the Command Prompt window (Figure 3).



```
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\Users\camer>python "C:\Users\camer\_PythonClass\Assignment06\main.py"

******* The current Tasks ToDo are: *******

Laundry (Mid)
Groceries (High)
Walk Dog (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] - 1

Task name: Mow Lawn
Task priority: Low

Success - the task has been added.

Press the [Enter] key to continue.

******* The current Tasks ToDo are: *******

Laundry (Mid)
Groceries (High)
Walk Dog (High)
Mow Lawn (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

What task would you like to remove? Laundry

Success - the task has been removed.

Press the [Enter] key to continue.

******* The current Tasks ToDo are: *******
```



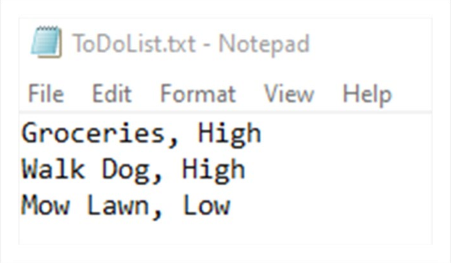
```
Press the [Enter] key to continue.

******* The current Tasks ToDo are: *******

Groceries (High)
Walk Dog (High)
Mow Lawn (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

Success - the data has been saved.

Press the [Enter] key to continue.

******* The current Tasks ToDo are: *******

Groceries (High)
Walk Dog (High)
Mow Lawn (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

Success.

Press the [Enter] key to continue.

******* The current Tasks ToDo are: *******

Groceries (High)
Walk Dog (High)
Mow Lawn (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:\Users\camer>
```

Figure 3: Example of the script successfully running in the Command Prompt window.

4. Confirm user input is being saved to the defined file location (Figure 4).



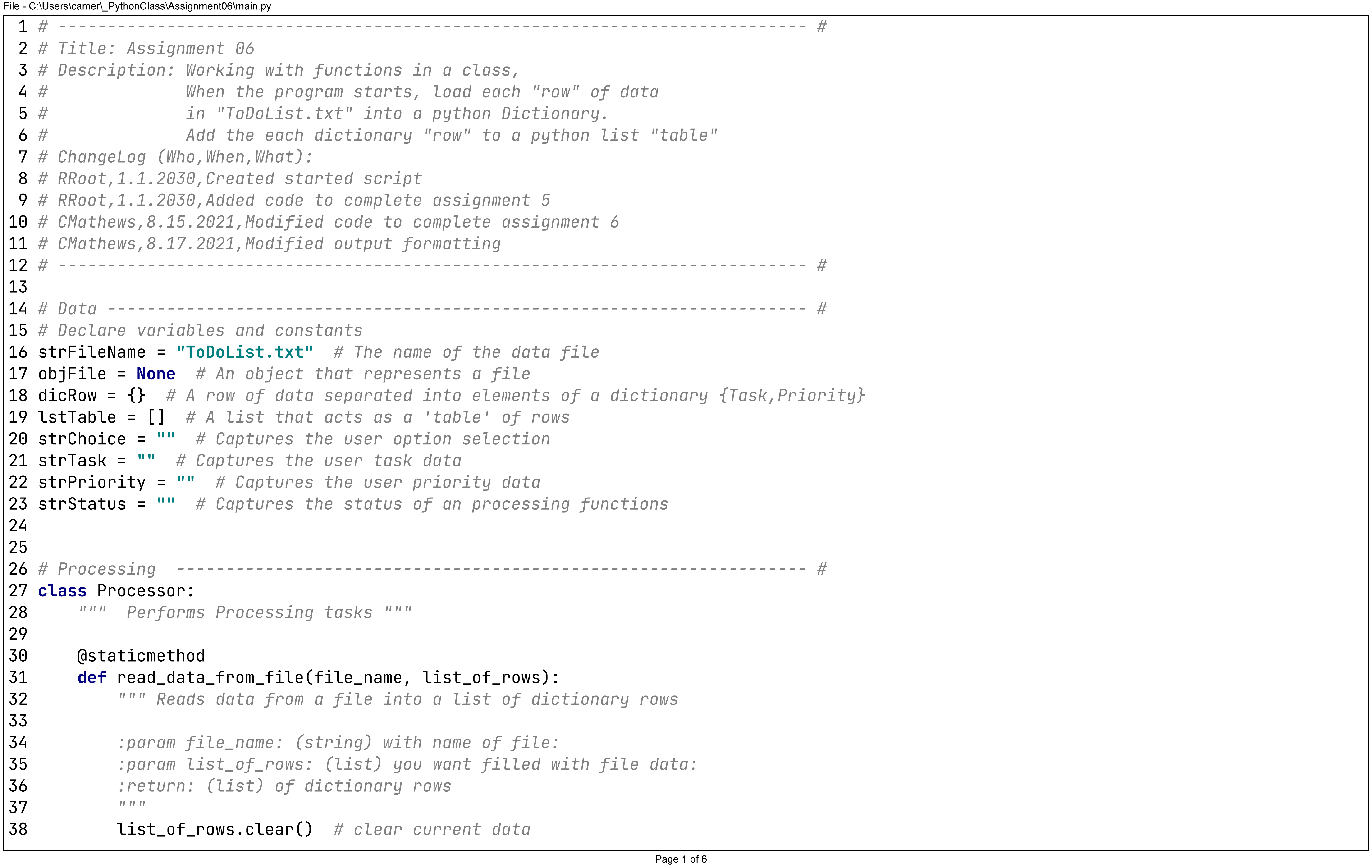
```
Groceries, High
Walk Dog, High
Mow Lawn, Low
```

Figure 4: Image of the text file that updates based on user input.

Summary

This document outlined the steps taken to modify and update a Python script written by a different author with additional functions that will allow a user to select from a menu of options to input to-do list items and their associated priority level, edit the list, and store the input data into a text file.

Appendix A



File - C:\Users\camer_PythonClass\Assignment06\main.py

```python
# ---------------------------------------------------------------------------- #
# Title: Assignment 06
# Description: Working with functions in a class,
#              When the program starts, load each "row" of data
#              in "ToDoList.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
# RRoot,1.1.2030,Added code to complete assignment 5
# CMathews,8.15.2021,Modified code to complete assignment 6
# CMathews,8.17.2021,Modified output formatting
# ---------------------------------------------------------------------------- #

# Data ----------------------------------------------------------------------- #
# Declare variables and constants
strFileName = "ToDoList.txt"  # The name of the data file
objFile = None  # An object that represents a file
dicRow = {}  # A row of data separated into elements of a dictionary {Task,Priority}
lstTable = []  # A list that acts as a 'table' of rows
strChoice = ""  # Captures the user option selection
strTask = ""  # Captures the user task data
strPriority = ""  # Captures the user priority data
strStatus = ""  # Captures the status of an processing functions


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

    @staticmethod
    def read_data_from_file(file_name, 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
```

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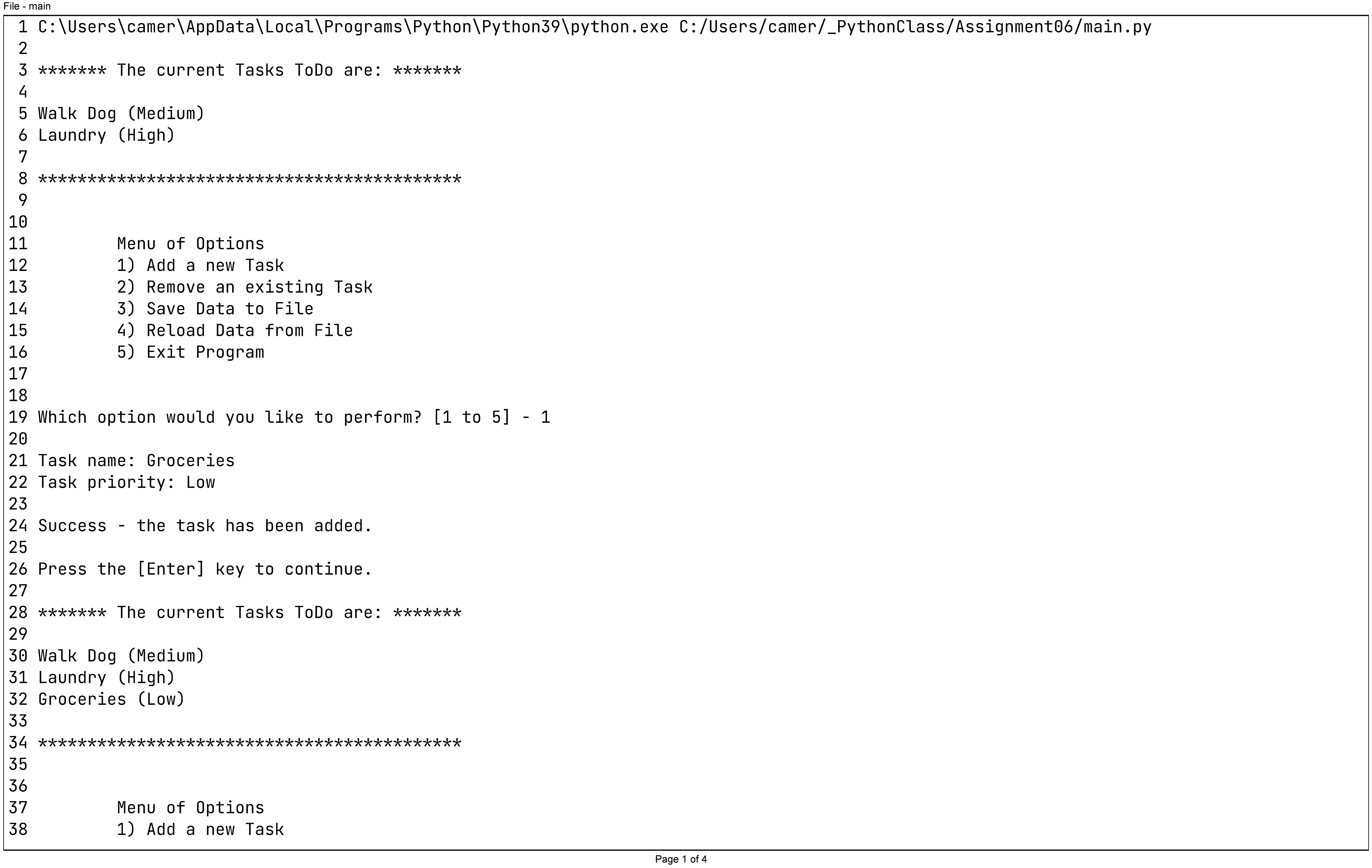
```python
        file = open(file_name, "r")
        for line in file:
            task, priority = line.split(",")
            row = {"Task": task.strip(), "Priority": priority.strip()}
            list_of_rows.append(row)
        file.close()
        return list_of_rows, '\nSuccess.'

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

        :param task: (string) with name of task:
        :param priority: (string) with priority of task:
        :param list_of_rows: (list) data you want added to list
        :return: (list) of dictionary rows
        """
        dicRow = {"Task": task, "Priority": priority}
        list_of_rows.append(dicRow)
        return list_of_rows, '\nSuccess - the task has been added.'

    @staticmethod
    def remove_data_from_list(task, list_of_rows):
        """Removes a task and its priority from the list

        :param task: (string) of task to remove
        :param list_of_rows: (list) of dictionary rows
        :return: (list) of dictionary rows, (string) message
        """
        for item in list_of_rows:
            if task == item["Task"]:
                list_of_rows.remove(item)
                return list_of_rows, "\nSuccess - the task has been removed."
            else:
                return list_of_rows, '\nError - task not found.'

    @staticmethod
    def write_data_to_file(file_name, list_of_rows):
        """Writes dictionary data to text file

        :param: file_name: (object) of text file
        :param: list_of_rows: (list) of dictionary rows
        :return: (list) of dictionary rows, (string) message
        """
        objFileText = open(file_name, "w")
        for item in list_of_rows:
            objFileText.write(item["Task"] + ", " + item["Priority"] + "\n")
        objFileText.close()
        return list_of_rows, '\nSuccess - the data has been saved.'


# Presentation (Input/Output)  -------------------------------------------- #
class IO:
    """ Performs Input and Output tasks """

    @staticmethod
    def print_menu_Tasks():
        """  Display a menu of choices to the user

        :return: nothing
        """
        print('''
        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
        ''')
        print()  # Add an extra line for looks

    @staticmethod
    def input_menu_choice():
        """ Gets the menu choice from a user

        :return: string
```

```python
        """
        choice = str(input("Which option would you like to perform? [1 to 5] - ")).strip()
        print()  # Add an extra line for looks
        return choice

    @staticmethod
    def print_current_Tasks_in_list(list_of_rows):
        """ Shows the current Tasks in the list of dictionaries rows

        :param list_of_rows: (list) of rows you want to display
        :return: nothing
        """
        print("\n******* The current Tasks ToDo are: *******\n")
        for row in list_of_rows:
            print(row["Task"] + " (" + row["Priority"] + ")")
        print("\n*******************************************")
        print()  # Add an extra line for looks

    @staticmethod
    def input_yes_no_choice(message):
        """ Gets a yes or no choice from the user

        :return: string
        """
        return str(input(message)).strip().lower()

    @staticmethod
    def input_press_to_continue(optional_message=''):
        """ Pause program and show a message before continuing

        :param optional_message:  An optional message you want to display
        :return: nothing
        """
        print(optional_message)
        input('\nPress the [Enter] key to continue.')

    @staticmethod
    def input_new_task_and_priority():
        task = input("Task name: ")
        priority = input("Task priority: ")
        return task, priority

    @staticmethod
    def input_task_to_remove():
        task = input("What task would you like to remove? ")
        return task


# Main Body of Script  ------------------------------------------------------- #

# Step 1 - When the program starts, Load data from ToDoFile.txt.
Processor.read_data_from_file(strFileName, lstTable)  # read file data

# Step 2 - Display a menu of choices to the user
while (True):
    # Step 3 Show current data
    IO.print_current_Tasks_in_list(lstTable)  # Show current data in the list/table
    IO.print_menu_Tasks()  # Shows menu
    strChoice = IO.input_menu_choice()  # Get menu option

    # Step 4 - Process user's menu choice
    if strChoice.strip() == '1':  # Add a new Task
        strTask, strPriority = IO.input_new_task_and_priority()
        lstTable, strStatus = Processor.add_data_to_list(strTask, strPriority, lstTable)
        IO.input_press_to_continue(strStatus)
        continue  # to show the menu

    elif strChoice == '2':  # Remove an existing Task
        strTask = IO.input_task_to_remove()
        lstTable, strStatus = Processor.remove_data_from_list(strTask, lstTable)
        IO.input_press_to_continue(strStatus)
        continue  # to show the menu

    elif strChoice == '3':  # Save Data to File
        strChoice = IO.input_yes_no_choice("Save this data to file? (y/n) - ")
        if strChoice.lower() == "y":
            lstTable, strStatus = Processor.write_data_to_file(strFileName,lstTable)
            IO.input_press_to_continue(strStatus)
        else:
            IO.input_press_to_continue("Save Cancelled!")
        continue  # to show the menu

    elif strChoice == '4':  # Reload Data from File
        print("Warning: Unsaved Data Will Be Lost!")
        strChoice = IO.input_yes_no_choice("Are you sure you want to reload data from file? (y/n) -  ")
        if strChoice.lower() == 'y':
            lstTable, strStatus = Processor.read_data_from_file(strFileName,lstTable)
            IO.input_press_to_continue(strStatus)
        else:
            IO.input_press_to_continue("File Reload Cancelled!")
        continue  # to show the menu

    elif strChoice == '5':  # Exit Program
        print("Goodbye!")
        break  # and Exit

```

Appendix B



File - main

```
C:\Users\camer\AppData\Local\Programs\Python\Python39\python.exe C:/Users/camer/_PythonClass/Assignment06/main.py

******* The current Tasks ToDo are: *******

Walk Dog (Medium)
Laundry (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] - 1

Task name: Groceries
Task priority: Low

Success - the task has been added.

Press the [Enter] key to continue.

******* The current Tasks ToDo are: *******

Walk Dog (Medium)
Laundry (High)
Groceries (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

What task would you like to remove? Walk Dog

Success - the task has been removed.

Press the [Enter] key to continue.

******* The current Tasks ToDo are: *******

Laundry (High)
Groceries (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

Success - the data has been saved.

Press the [Enter] key to continue.

```

```
******* The current Tasks ToDo are: *******

Laundry (High)
Groceries (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

Success.

Press the [Enter] key to continue.

******* The current Tasks ToDo are: *******

Laundry (High)
Groceries (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!

Process finished with exit code 0

```