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Foundations of Python Programming

Assignment 05

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GitHub: https://github.com/clancypython/UWPythonCourse

Read and Write data in List and Dictionary

Introduction

In Module 5, I learned using Lists, Dictionary, error handling, creating functions, local/global variables, creating script templates and further functioning GitHub!.

This week assignment is to create a program that provide a manual of actions that the user would like to do on data and read, write, remove and save the data from the txt file. I started to enhance the code from the starter file provided in this course.

Documentation with script header

Always maintain a script header as template and start there to document the developer's name and date of creating the program with description on the purpose of the program. For changes updated later, record the ChangeLog for record as well.

```
# ------------------------------------------------------------------------ #
# 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
# Cheng Ka Ho, 11 May 2023,Added code to complete assignment 5
# ------------------------------------------------------------------------ #
```

Figure 1. Script Header

Declare variables

I tried to put all the variables used and their declaration in the beginning of the program for easy reference. This help to understand what variables will be used in the program by reading the comment on them.

```
# -- Data -- #
# declare variables and constants
strFile = "ToDoList.txt"   # 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

```

Figure 2. Variable Declaration and their description

Check and load the existing list of Data (if any)

This step is simply to check if there is existing file called ToDoList.txt. If so, the code will load the data from that list to computer memory. If not, the code will result in an error message saying there is no such file.

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

Figure 3. Load data from the existing data txt file (if any).

Display an action menu on data processing.

```
# -- 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
```

Figure 4. Displaying an action menu for user to choose.

1) Show current data:

```
    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'):
        # TODO: Add Code Here
        for objRow in lstTable:
            print(objRow["Task"] + "," + objRow["Priority"])
        continue
```

Result:

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

Item,Value
Sleep,high
Eat,High
```

2) Add a new item

```
    # Step 4 - Add a new item to the list/Table
    elif (strChoice.strip() == '2'):
        # TODO: Add Code Here
        strToDo = input("To Do:")
        strPriority = input("Priority:")
        dicRow = {"Task": strToDo, "Priority": strPriority}
        lstTable.append(dicRow)
        print("Data Added!")
        continue
```

Result:

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

To Do:reading
Priority:low
Data Added!
```

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

Item,Value
Sleep,high
Eat,High
reading,low
```

3) Remove an item

```
    # Step 5 - Remove a new item from the list/Table
    elif (strChoice.strip() == '3'):
        # TODO: Add Code Here
        strItem= input("Which Task to remove?:")
        for row in lstTable:
            if row["Task"].lower() == strItem.lower():
                lstTable.remove(row)
                print("Row Removed")
            else:
                print("Row Not Found")
        continue
```

Result

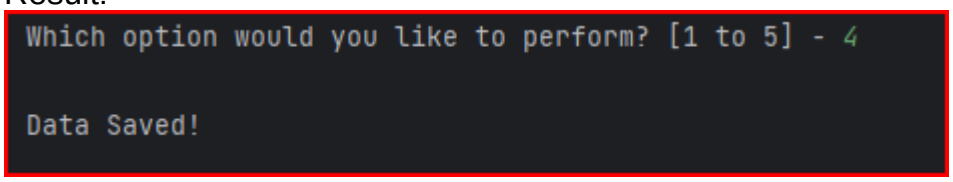
```
Which option would you like to perform? [1 to 5] - 3

Which Task to remove?:sleep
Row Not Found
Row Removed
Row Not Found
```

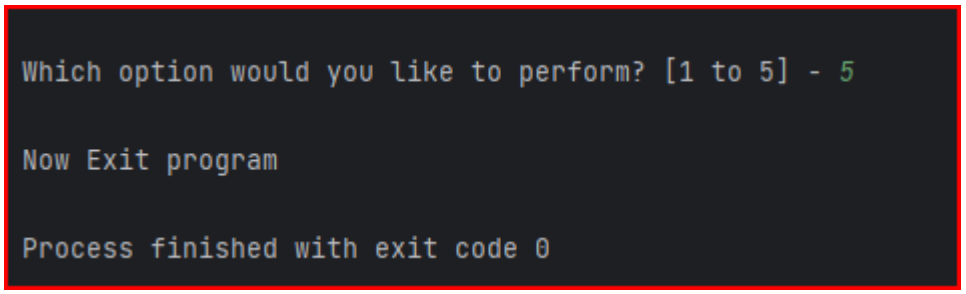
```
Which option would you like to perform? [1 to 5] - 1

Item,Value
Eat,High
reading,low
```

4) Save Data to File & Exit Program

```
    # Step 6 - Save tasks to the ToDoToDoList.txt file
    elif (strChoice.strip() == '4'):
        # TODO: Add Code Here
        objFile = open(strFile, "w")
        for dicRow in lstTable:
            objFile.write(dicRow["Task"] + "," + dicRow["Priority"] + "\n")
        objFile.close()

        print("Data Saved!")
        continue
    # Step 7 - Exit program
    elif (strChoice.strip() == '5'):
        # TODO: Add Code Here
        print('Now Exit program')
        break  # and Exit the program
```

Result:





Summary

This assignment further develop us to work with list, dictionaries and input/output to text file for storing data permanently. In addition, share our work in GitHub and learn different function on GitHub.