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February 16, 2023

Foundations of Programming: Python

Assignment 05

## Working with Dictionaries and Files

### Introduction:

In this assignment, I modified a preexisting script to perform a variety of options. I have two columns of data: "Task" and "Priority" and they are loaded into a Python Dictionary object. Each dictionary object represents one row of data, and these rows are added to a List object that created a table of data. The data is then saved into a txt file.

### Data

Declaring Variables and Constants:

I started the assignment by declaring the variables and constants. This important because I need to know what I am working with so I can call on it later.

```
# declare variables and constants
objFile = []
dicRow = {}    # A row of data separated into elements of a dictionary {Task,Priority}
lstTable = []  # A list that acts as a 'table' of rows
strFile = "ToDoList.txt"
```

Figure1 – Variables and Constants

Next step is to process the data. I am loading any data I have in a text file called ToDoList.txt. I had to create the text file and input data in.

```
Mow the Lawn, Medium
Wash the Dishes, High
Bathe the Dog, Low
```

Figure2 – ToDoList with data

Then I used this script to process the data and printed it to the screen (I wanted to see what the data looks like).

```

objFile = open(strFile, "r")
for row in objFile:
    lstRow = row.split(",")
    dicRow = {"Task":lstRow[0], "Priority":lstRow[1].strip()}
    lstTable.append(dicRow)
objFile.close()
print(lstTable)

```

Figure3 – Processing the data

### Presentation:

This step is to display a menu of choices to the user.

```

# -- 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] - "))

```

Figure4 – Menu of choices

### Processing:

The last step is to process the data, depending on what the user chooses. When the user choose “1) Show current data”, we show the current items in the table with this script.

```

# Step 3 - Show the current items in the table
if (strChoice.strip() == '1'):
    for dicRow in lstTable:
        print(dicRow["Task"], dicRow["Priority"], sep=", ")

```

Figure 5 – Showing current Items

When the user chooses “2) Add a new item” we ask them what they would like to add and append it to the lstTable.

```
# Step 4 - Add a new item to the list/Table
elif (strChoice.strip() == '2'):
    strTask = str(input("What task would you like to add? "))
    strPriority = str(input("What is the priority of the task? "))
    dicRow = {"Task":strTask, "Priority":strPriority}
    lstTable.append(dicRow)
```

Figure6 – Adding a new item

When the user chooses “3) Remove an existing item” we ask them what they would like to delete and loop the choice through the table and remove the row. This one I struggle with and will need to refresh my memory.

```
# Step 5 - Remove a new item from the list/Table
elif (strChoice == '3'):
    strDelete = input("Which Task would you like to delete? ")
    BInItemRemoved = False
    intRowNumber = 0
    while(intRowNumber < len(lstTable)):
        if(strDelete == str(list(dict(lstTable[intRowNumber]).values())[0])):
            del lstTable[intRowNumber]
            bInItemRemoved = True

        intRowNumber +=1
```

Figure7 – Deleting an Item

When the user chooses “4) Save Data to File” we open the file and write in it.

```
# Step 6 - Save tasks to the ToDoToDoList.txt file
elif (strChoice.strip() == '4'):

    objFile = open(strFile, "w")
    for dicRow in lstTable:
        objFile.write(dicRow["Task"] + ', ' + dicRow["Priority"] + '\n')

    objFile.close()
```

Figure8 – Saving to file

Last but not least, when the user chooses “5) Exit Program” the loop breaks and the program ends.

```
# Step 7 - Exit program
elif (strChoice.strip() == '5'):

    break
```

Figure9 – Exit Program

### Summary

I found it quite helpful to organize the script by 3 sections; Data, Processing, and Presentation. I also found this assignment quite challenging as it's combining knowledge from all the previous modules and workign them together into a script.

```
[{'Task': 'Mow the Lawn', 'Priority': 'Medium'}, {'Task': 'Wash the Dishes', 'Priority': 'High'}, {'Task': 'Bathe the Dog', 'Priority': 'Low'}]  
Your current data is:
```

```
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
```

```
Mow the Lawn, Medium  
Wash the Dishes, High  
Bathe the Dog, Low
```

```
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 would you like to add? Eat  
What is the priority of the task? 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] - 1
```

```
Mow the Lawn, Medium  
Wash the Dishes, High  
Bathe the Dog, Low  
Eat, 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] -
```

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

Which Task would you like to delete? *Mow the Lawn*

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

Wash the Dishes, High

Bathe the Dog, Low

Eat, 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

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




\*ToDoList.txt - Notepad

File Edit Format View Help

Mow the Lawn, Medium  
Wash the Dishes, High  
Bathe the Dog, Low

Oiriginal List

---

 ToDoList.txt - Notepad

File Edit Format View Help

---

Wash the Dishes, High  
Bathe the Dog, Low  
Eat, High

Modified list