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IT FDN 110

Assignment06

Module 06

Introduction:

The goal of this assignment was to become familiar with functions and classes. Functions are “chunks” of code separate from the main script which can be called upon by the main script to perform a task multiple times without having to use a loop, and functions can also have data passed into them as parameters to then produce an output using those parameters. Oftentimes we can also use classes to group together functions that perform the same category of actions such as processing data.

Moving our code:

There were several things we needed to do for this assignment however at its core it boiled down to taking pieces of code from the main script and creating functions using them that could be called upon multiple times by the script. We are given several TODOs in the starting code to tell us what we should ideally make a function. The first is to create two functions for both adding a cd (see figure 1) and deleting an entry (see figure 2).

```
 def addCD():
        # TODO add functions for processing here
        strID = input('Enter ID: ').strip()
        strTitle = input('What is the CD\'s title? ').strip()
        strArtist = input('What is the Artist\'s name? ').strip()
        intID = int(strID)
        dicRow = {'ID': intID, 'Title': strTitle, 'Artist': strArtist}
        lstTbl.append(dicRow)
        return lstTbl
```

Figure 1----------

```
def removeCD(intIDDel):
        intRowNr = -1
        blnCDRemoved = False
        for row in lstTbl:
            intRowNr += 1
            if row['ID'] == intIDDel:
                del lstTbl[intRowNr]
                blnCDRemoved = True
                break
        if blnCDRemoved:
            print('The CD was removed')
        else:
            print('Could not find this CD!')
        return lstTbl
```

Figure 2----------

Once we create our functions we can put them in a call together since they are functions that fall under the same type of action, processing data (see figure 3) and this class and its functions can be called on in the main script when the actions are needed to be run (see figure 4).

```
class DataProcessor:
    def addCD():
        # TODO add functions for processing here
        strID = input('Enter ID: ').strip()
        strTitle = input('What is the CD\'s title? ').strip()
        strArtist = input('What is the Artist\'s name? ').strip()
```

```
        intID = int(strID)
        dicRow = {'ID': intID, 'Title': strTitle, 'Artist': strArtist}
        lstTbl.append(dicRow)
        return lstTbl
    def removeCD(intIDDel):
        intRowNr = -1
        blnCDRemoved = False
        for row in lstTbl:
            intRowNr += 1
            if row['ID'] == intIDDel:
                del lstTbl[intRowNr]
                blnCDRemoved = True
                break
        if blnCDRemoved:
            print('The CD was removed')
        else:
            print('Could not find this CD!')
        return lstTbl
    pass
```

Figure 4----------

The next item on our list of TODOs was to add some code to the “write_file” function. However in order to understand what code to write we need to figure out what action the function is referring to. After browsing around the main script we can see that there seems to be code that runs when the user would like to save their inventory to the file (see figure 5).

```
elif strChoice == 's':
        # 3.6.1 Display current inventory and ask user for confirmation to save
        IO.show_inventory(lstTbl)
        strYesNo = input('Save this inventory to file? [y/n] ').strip().lower()
        # 3.6.2 Process choice
        if strYesNo == 'y':
            # 3.6.2.1 save data
            # TODO move processing code into function
            objFile = open(strFileName, 'w')
            for row in lstTbl:
                lstValues = list(row.values())
                lstValues[0] = str(lstValues[0])
                objFile.write(','.join(lstValues) + '\n')
            objFile.close()
        else:
            input('The inventory was NOT saved to file. Press [ENTER] to return to the menu.')
        continue  # start loop back at top.
```

Figure 5----------

We can simply take this code and move it into our new function (see figure 6.1 and 6.2).

```
elif strChoice == 's':
        # 3.6.1 Display current inventory and ask user for
confirmation to save
        IO.show_inventory(lstTbl)
        strYesNo = input('Save this inventory to file?
[y/n] ').strip().lower()
        # 3.6.2 Process choice
        if strYesNo == 'y':
            # 3.6.2.1 save data
            FileProcessor.write_file(strFileName,lstTbl)
        else:
            input('The inventory was NOT saved to file.
Press [ENTER] to return to the menu.')
        continue  # start loop back at top.
```

Figure 6.1----------

```
def write_file(file_name, table):
        objFile = open(strFileName, 'w')
        for row in lstTbl:
            lstValues = list(row.values())
            lstValues[0] = str(lstValues[0])
            objFile.write(','.join(lstValues) + '\n')
        objFile.close()
        pass
```

Figure 6.2----------

Summary:

Finally after putting all our code together we can see it running in both spyder (see figure 7.1 to 7.4) and the command line (see figure 8.1 to 8.3) as well as the output produced by the run from the command line.

Figure 7.1----------

```
Python 3.8.8 (default, Apr 13 2021, 15:08:03) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.

IPython 7.22.0 -- An enhanced Interactive Python.

runfile('E:/UW PYTHON/Mod_06/CDInventory.py', wdir='E:/UW PYTHON/Mod_06')
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit


Which operation would you like to perform? [l, a, i, d, s or x]: a


Enter ID: 1

What is the CD's title? uno

What is the Artist's name? green day
======= The Current Inventory: =======
ID         CD Title (by: Artist)

1          uno (by:green day)
=====================================
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit


Which operation would you like to perform? [l, a, i, d, s or x]: a


Enter ID: 2

What is the CD's title? Bleed America

What is the Artist's name? Jimmy Eat World
======= The Current Inventory: =======
ID         CD Title (by: Artist)

1          uno (by:green day)
2          Bleed America (by:Jimmy Eat World)
=====================================
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit


Which operation would you like to perform? [l, a, i, d, s or x]: a


Enter ID: 3

What is the CD's title? Living Proof
```

Figure 7.2----------

```
What is the Artist's name? State Champs
======= The Current Inventory: =======
ID       CD Title (by: Artist)

1        uno (by:green day)
2        Bleed America (by:Jimmy Eat World)
3        Living Proof (by:State Champs)
=====================================
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit


Which operation would you like to perform? [l, a, i, d, s or x]: a


Enter ID: 4

What is the CD's title? Tickets To My Downfall

What is the Artist's name? Machine Gun Kelly
======= The Current Inventory: =======
ID       CD Title (by: Artist)

1        uno (by:green day)
2        Bleed America (by:Jimmy Eat World)
3        Living Proof (by:State Champs)
4        Tickets To My Downfall (by:Machine Gun Kelly)
=====================================
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit


Which operation would you like to perform? [l, a, i, d, s or x]: a


Enter ID: 5

What is the CD's title? Thank You Next

What is the Artist's name? Ariana Grande
======= The Current Inventory: =======
ID       CD Title (by: Artist)

1        uno (by:green day)
2        Bleed America (by:Jimmy Eat World)
3        Living Proof (by:State Champs)
4        Tickets To My Downfall (by:Machine Gun Kelly)
5        Thank You Next (by:Ariana Grande)
=====================================
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
```

Figure 7.3----------

```
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit


Which operation would you like to perform? [l, a, i, d, s or x]: i

======= The Current Inventory: =======
ID       CD Title (by: Artist)

1        uno (by:green day)
2        Bleed America (by:Jimmy Eat World)
3        Living Proof (by:State Champs)
4        Tickets To My Downfall (by:Machine Gun Kelly)
5        Thank You Next (by:Ariana Grande)
=====================================
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit


Which operation would you like to perform? [l, a, i, d, s or x]: d

======= The Current Inventory: =======
ID       CD Title (by: Artist)

1        uno (by:green day)
2        Bleed America (by:Jimmy Eat World)
3        Living Proof (by:State Champs)
4        Tickets To My Downfall (by:Machine Gun Kelly)
5        Thank You Next (by:Ariana Grande)
=====================================

Which ID would you like to delete? 5
The CD was removed
======= The Current Inventory: =======
ID       CD Title (by: Artist)

1        uno (by:green day)
2        Bleed America (by:Jimmy Eat World)
3        Living Proof (by:State Champs)
4        Tickets To My Downfall (by:Machine Gun Kelly)
=====================================
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit


Which operation would you like to perform? [l, a, i, d, s or x]: s

======= The Current Inventory: =======
ID       CD Title (by: Artist)

1        uno (by:green day)
2        Bleed America (by:Jimmy Eat World)
3        Living Proof (by:State Champs)
```

Figure 7.4----------

```
4         Tickets To My Downfall (by:Machine Gun Kelly)
====================================

Save this inventory to file? [y/n] y
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit


Which operation would you like to perform? [l, a, i, d, s or x]: l

WARNING: If you continue, all unsaved data will be lost and the Inventory re-loaded from file.

type 'yes' to continue and reload from file. otherwise reload will be canceled yes
reloading...
======= The Current Inventory: =======
ID        CD Title (by: Artist)

1         uno (by:green day)
2         Bleed America (by:Jimmy Eat World)
3         Living Proof (by:State Champs)
4         Tickets To My Downfall (by:Machine Gun Kelly)
====================================
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit


Which operation would you like to perform? [l, a, i, d, s or x]: x
```

Figure 8.1----------

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

C:\Users\usman>E:

E:\>cd "UW PYTHON"

E:\UW PYTHON>cd Mod_06

E:\UW PYTHON\Mod_06>python CDInventory.py
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [l, a, i, d, s or x]: l

WARNING: If you continue, all unsaved data will be lost and the Inventory re-loaded from file.
type 'yes' to continue and reload from file. otherwise reload will be canceled yes
```

Figure 8.2----------

```
reloading...
======= The Current Inventory: =======
ID      CD Title (by: Artist)

1       uno (by:green day)
2       Bleed America (by:Jimmy Eat World)
3       Living Proof (by:State Champs)
4       Tickets To My Downfall (by:Machine Gun Kelly)
=====================================
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [l, a, i, d, s or x]: 3
Which operation would you like to perform? [l, a, i, d, s or x]: d

======= The Current Inventory: =======
ID      CD Title (by: Artist)

1       uno (by:green day)
2       Bleed America (by:Jimmy Eat World)
3       Living Proof (by:State Champs)
4       Tickets To My Downfall (by:Machine Gun Kelly)
=====================================
Which ID would you like to delete? 3
The CD was removed
======= The Current Inventory: =======
ID      CD Title (by: Artist)

1       uno (by:green day)
2       Bleed America (by:Jimmy Eat World)
4       Tickets To My Downfall (by:Machine Gun Kelly)
=====================================
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [l, a, i, d, s or x]: i

======= The Current Inventory: =======
ID      CD Title (by: Artist)

1       uno (by:green day)
2       Bleed America (by:Jimmy Eat World)
4       Tickets To My Downfall (by:Machine Gun Kelly)
=====================================
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [l, a, i, d, s or x]: s
```

Figure 8.3----------

```
======= The Current Inventory: =======
ID      CD Title (by: Artist)

1       uno (by:green day)
2       Bleed America (by:Jimmy Eat World)
4       Tickets To My Downfall (by:Machine Gun Kelly)
=======================================
Save this inventory to file? [y/n] y
Menu

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] delete CD from Inventory
[s] Save Inventory to file
[x] exit

Which operation would you like to perform? [l, a, i, d, s or x]: x
```

CDInventory.txt

```
1,uno,green day
2,Bleed America,Jimmy Eat World
4,Tickets To My Downfall,Machine Gun Kelly

```

Figure 9----------

In the end I was able to edit and manipulate code so that I could implement the use of functions to create a more efficient program. Functions and classes allow programmers to organize their code in ways that are more efficient and better and are considered a more pythonic way in order to clean up and streamline their code even more.