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August 29 2021

IT FDN 110

Assignment08

Module 08

Introduction:

The goal of this assignment was to start getting familiar and to start working with object oriented programming python by creating our own objects and implementing them into the CDinvenotry script that we have been working on.

Creating out objects:

We need each cd entry to be its own object and in order to do that we first need to create a class for the object where all its data can be processed (see figure 1)

```
#Figure 1
class CD:
    """Stores data about a CD:

    properties:
        cd_id: (int) with CD ID
        cd_title: (string) with the title of the CD
        cd_artist: (string) with the artist of the CD
    methods:

    """
```

and where all its constructors will be located (see figure 2.1-2.2).

```
#Figure 2.1
def __init__(self, cd_id, cd_title, cd_artist):
        self.__cd_id = cd_id
        self.__cd_title = cd_title
        self.__cd_artist = cd_artist
```

Constructors are special methods which are invoked when we create an object. The constructor method used in python is known as the dunder init method which helps us instantiate an object when it is called. When the dunder init method is called by python it passes any arguments that we have setup, in this case the cd's id, title, and artist, when creating an object to the dunder init method (see figure 2.1-2.2).

```
#Figure 2.2
def cd_id(self):
        return self.cd_id

    def cd_title(self):
        return self.cd_title

    def cd_artist(self):
        return self.cd_artist
```

Updating our existing code:

After creating our class we then need to edit our existing code. The key parts that we need to edit are where we ask the user for the info about the cd. We need to be able to pass in the information into our CD class to create a new cd object (see figure 3).

```python
#Figure 3
def cdInfo():
    while True:
        try:
            strID = int(input('Enter ID: ').strip())
            break
        except ValueError:
            print('Please enter a number!')
    strTitle = input('What is the CD\'s title? ').strip()
    strArtist = input('What is the Artist\'s name? ').strip()
    cdObj=CD(strID, strTitle, strArtist)
    return cdObj
pass
```

Next we need to change the code for the area where we delete an entry from the inventory that the user would like to get rid of (see figure 4.1-4.2).

```python
#Figure 4.1
def removalInfo():
    """Asks user to input the CD ID to determine which entry to remove from inventory currently in memory.
    Returns:
        Int: entry (integer) number.
    """
    while True:
        try:
            intIDDel = int(input('Which ID would you like to delete? ').strip())
            break
        except ValueError:
            print('Please enter an ID number')
    return intIDDel
```

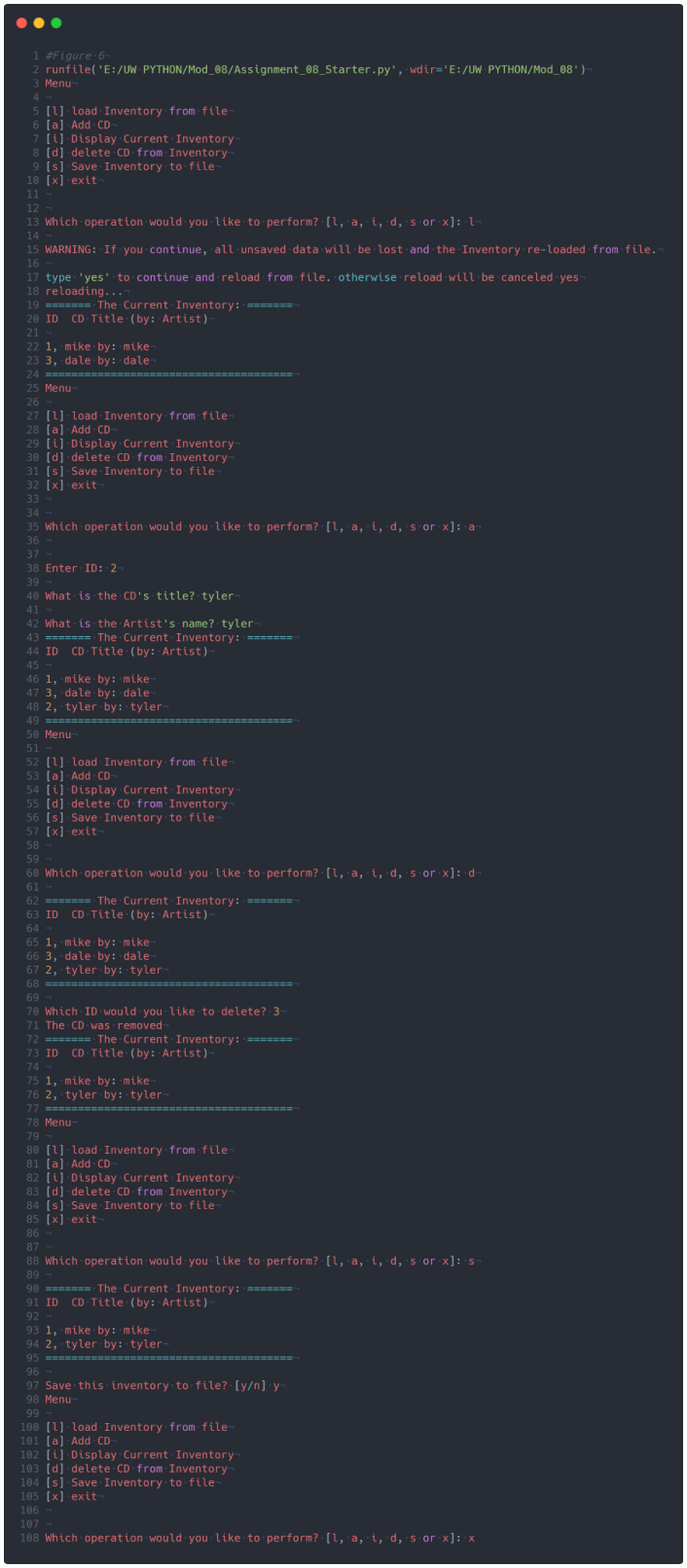
```python
#Figure 4.2
def removeCD(cdNumber, cdList):

    """Function that is utilized to delete and entry from the inventory or
    an element from the list containing dictionaries. The value/entry number
    the user enters is used to search in the dictionary containing the key
    and value the user has entered and then deletes that element from the 2d table (lstTbl).
    Args:
        cdNumber (integer): an integer value is entered which corresponds to the entry number for the cd the
        user would to remove from inventory
        cdList (list containing dictionaries): 2D table of date (or a list of dictionaries)
        which contains the data in memory during the time the program is running.

    Returns:
        None.
    """
    intRowNr = -1
    for row in cdList:
        try:
            intRowNr += 1
            tmp=vars(row)
            print(tmp)
            checknum=tmp.get("_CD__cd_id")
            if checknum == (cdNumber):
                del cdList[intRowNr]
            else:
                ('Please pick a valid entry to remove')
        except UnboundLocalError:
            print("Please pick a valid entry to remove")
```

Finally the last place we need to edit our code is in how we show our inventory. Because we are trying to print out an object we need a function, in this case the __str__ function to help print out our object as a readable string (see figure 5).

```python
#Figure 5
def __str__(self):
    return(str(self.__cd_id) + ',' + self.__cd_title + ' by: ' + self.__cd_artist)
```

Summary:

Finally here is what our code looks like running in spyder (see figure 6) and in terminal (see figure 7).



```
#Figure 6
runfile('E:/UW PYTHON/Mod_08/Assignment_08_Starter.py', wdir='E:/UW PYTHON/Mod_08')
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, mike by: mike
3, dale by: dale
======================================
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? tyler

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

1, mike by: mike
3, dale by: dale
2, tyler by: tyler
======================================
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, mike by: mike
3, dale by: dale
2, tyler by: tyler
======================================

Which ID would you like to delete? 3
The CD was removed
======= The Current Inventory: =======
ID  CD Title (by: Artist)

1, mike by: mike
2, tyler by: tyler
======================================
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, mike by: mike
2, tyler by: tyler
======================================

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
```

```
#Figure 7
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\Users\usman>cd E:
E:\

C:\Users\usman>E:

E:\>cd "UW PYTHON"

E:\UW PYTHON>cd Mod_08

E:\UW PYTHON\Mod_08>python
Python 3.9.4 (tags/v3.9.4:1f2e308, Apr  6 2021, 13:40:21) [MSC v.1928 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> exit
Use exit() or Ctrl-Z plus Return to exit
>>> ^Z


E:\UW PYTHON\Mod_08>python Assignment_08_Starter.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
reloading...
======= The Current Inventory: =======
ID ···· CD Title (by: Artist)

1, mike by: mike
2, tyler by: tyler
======================================
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, mike by: mike
2, tyler by: tyler
======================================
Which ID would you like to delete? 1
The CD was removed
======= The Current Inventory: =======
ID ···· CD Title (by: Artist)

2, tyler by: tyler
======================================
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? mike
What is the Artist's name? mike
======= The Current Inventory: =======
ID ···· CD Title (by: Artist)

2, tyler by: tyler
1, mike by: mike
======================================
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)

2, tyler by: tyler
1, mike by: mike
======================================
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


E:\UW PYTHON\Mod_08>
```

And here is the output of our code (see figure 8).

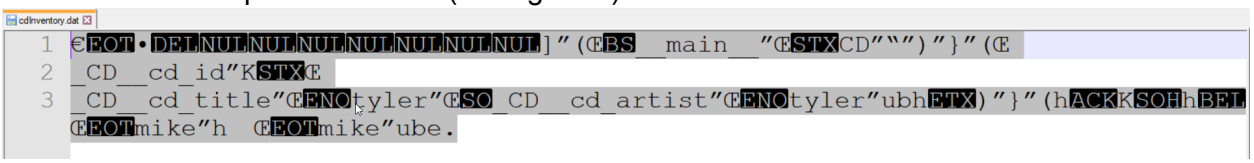


Figure 8