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Foundations of Programming Python

Assignment 05

Using Dictionaries and additional functionalities such as load and delete data from file

Introduction

In this assignment, I used the started script provided and modified it to replace the inner data structure by dictionaries. Additional functionalities were added to load existing data and delete an entry.

Setting up a menu for user to add to add their choices:

Dictionaries were used in this assignment. Dictionaries are a collection of keys to store data value similar to a map. This is unlike other data types which hold a single value as an element. Dictionaries hold key:value pair. Fig 1 represents an example of dictionary (dicRow) to add the user input.

```
#Add data to the table (2D list) each time the user wants to add data.
    elif menuSelection.lower() == 'a':
        ID= ID+1
        Title = input ('what is the title of your CD? ')
        Artist = input ('what is the artist name?')
        row = (ID, Title, Artist)
        dicRow={'ID': ID, 'Title': Title, 'Artist': Artist}     #dictionary row
        CDInventory.append(dicRow)                               #list of dictionaries
        print("your CD is added. Don't forget to save your work!")
```

Fig 1. Using dictionaries to hold user data

To set up a menu, I used a while loop with options: load (l), display (d), save (s), add (a), remove (r), and exit (x).

Load: I wanted the load functionality to load the values from the list in the CDInventory.txt into the CDInventory list in the Python program. The CDInventory in Python would be updated with the values in the text file. To load the menu I used: lstRow=row.strip().split(','). The strip() to remove whitespaces form the beginning/end of a string while , the split() will split the string into substring with the separator. Fig 2. Shows an example of a script for loading functionality.

```
#Load the data from the file
    if menuSelection.lower() == 'L':
        objFile=None
        lstRow=[]
        print('Load')
        CDInventory.clear()
        objFile=open('CDInventory.txt', 'r')
        for row in objFile:
            lstRow=row.strip().split(',')
            dicRow ={'ID': lstRow[0],'Artist':lstRow[1], 'Album':lstRow[2] }
            CDInventory.append(lstRow)
        objFile.close()
```

Fig 2. load to file script

Display: This function displays all the list data that is stored in the CDInventory list of dictionaries including ID, Artist and Album. print(*row.values(), sep=',') is a useful function to display and print all values to user. Fig 3 Illustrates the script for this functionality.

```
#Display the current data to the user each time the user wants to display the data.
    elif menuSelection.lower() == 'd':
        print('Display the CD Inventory contents')
        print('\nID', 'Title', 'Artist')
        print('___ _____ _____')
        for row in CDInventory:
            print(*row.values(), sep=',')
```

Fig 3. Display script

Save: This functionality would allow selection of an item in a row, adding the item to the row, writing the row to file and closing the file. Fig 4. Illustrates the script for this functionality.

```
#save the file
    elif menuSelection.lower() == 's':
        print('save')
        objFile=open('CDInventory.txt', 'w')          #open file
        for row in CDInventory:
            lstRow =''
            for item in row.values():                 #select an item in the row
                lstRow+=str(item)+','                 #add the item to the row
            objFile.write(lstRow)                     #write the row to the file
        objFile.close()                               #close the file
        print('Your CD list was saved. You may safely exit now.')
```

Fig 4. Displaying save script

Add: This functionality would allow the user to add their choices to the menu. A dictionary was used here containing keys and value pairs. An example of "add" functionality is presented in Fig 5.

```
#Add data to the table (2D list) each time the user wants to add data.
    elif menuSelection.lower() == 'a':
        ID= ID+1
        Title = input ('what is the title of your CD? ')
        Artist = input ('what is the artist name?')
        lstRow = (ID, Title, Artist)
        dicRow={'ID': ID, 'Title': Title, 'Artist': Artist}    #dictionary row
        CDInventory.append(dicRow)                             #list of dictionaries
        print("your CD is added. Don't forget to save your work!")
```

Fig 5. Add (to the menu) code

Remove: To delete an item CDInventory.pop(delRow-1) was used. This will remove the entire row. An example of a code that deletes a row in the dictionary is illustrated in Fig 6.

```
#Remove a row in the table as designated by the user
    elif menuSelection.lower() == 'r':
        print('/////////////////////////////////////\n')
        print('you have chosen to delete a row from CD Inventory\n')
        print('ID', 'Title', 'Artist')
        for row in CDInventory:
            print(*row.values(), sep=',')
        delRow = int(input('enter row # to delete: '))
        CDInventory.pop(delRow-1)
        print('Row ', delRow,' was removed. This is your new inventory:')
        print('\nID', 'Title', 'Artist')
        print('___ _____ _____ ')
        for row in CDInventory:
            print(*row.values(), sep=',')
```

Fig 6. Delete script

The screenshots below (Fig7a, b, c, d, e) illustrate the script in python running and an image captured on my computer.

Add functionality:

```
In [1]: runfile('C:/_FDProgramming/Assignment05/CDInventory.py', wdir='C:/
_FDProgramming/Assignment05')
---------------------------
Welcome to the CD Inventory

Your Menu for tonight:
[l] load
[d] display
[s] save
[a] add
[r] remove
[x] exit
Enter Your Choice: a
what is the title of your CD? lemonade
what is the artist name?Beyonce
your CD is added. Don't forget to save your work!
CDInventory
---------------------------
Welcome to the CD Inventory

Your Menu for tonight:
[l] load
[d] display
[s] save
[a] add
[r] remove
[x] exit
Enter Your Choice: a
what is the title of your CD? Anti Hero
what is the artist name?Taylor Swift
your CD is added. Don't forget to save your work!
CDInventory
```

Fig 7a, Add functionality from the script running from Python

Display:

```
Your Menu for tonight:
[l] load
[d] display
[s] save
[a] add
[r] remove
[x] exit
Enter Your Choice: d
Display the CD Inventory contents

ID Title Artist

___ _____ _____
1,lemonade,Beyonce
2,Anti Hero,Taylor Swift
CDInventory
---------------------------
```

Fig 7b, Display functionality from the script running from Python

Save:

```
Your Menu for tonight:
[l] load
[d] display
[s] save
[a] add
[r] remove
[x] exit
Enter Your Choice: s
save
Your CD list was saved. You may safely exit now.
CDInventory
```
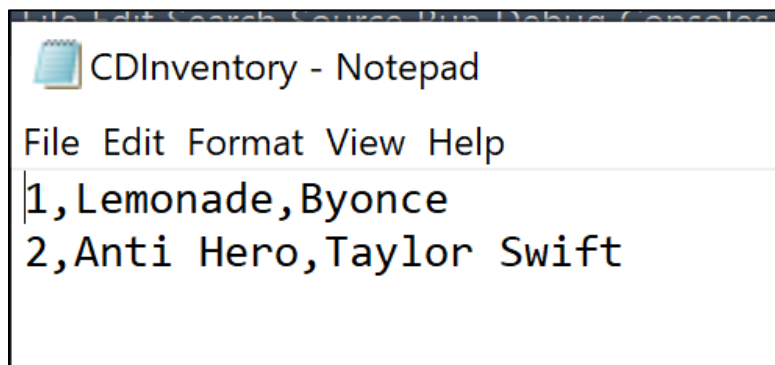
CDInventory - Notepad

File Edit Format View Help

```
1,Lemonade,Byonce
2,Anti Hero,Taylor Swift
```

Fig 7c, Save functionality from the script running from Python and result in Note pad text file

Delete (remove):

```
--------------------------
Welcome to the CD Inventory

Your Menu for tonight:
[l] load
[d] display
[s] save
[a] add
[r] remove
[x] exit
Enter Your Choice: r
//////////////////////////////

you have chosen to delete a row from CD Inventory

ID Title Artist
1,Lemonade,Byonce
2,Anti Hero,Taylor Swift
enter row # to delete: 2
Row  2  was removed. This is your new inventory:

ID Title Artist
___ _____ _____
1,Lemonade,Byonce
CDInventory
--------------------------
Welcome to the CD Inventory
```
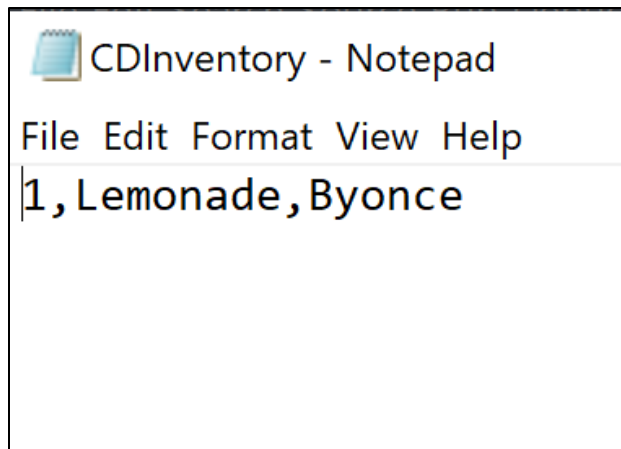
Fig 7d, Delete functionality from the script running from Python and result in text file

Load:


```
-----------------------------
Welcome to the CD Inventory

Your Menu for tonight:
[l] load
[d] display
[s] save
[a] add
[r] remove
[x] exit
Enter Your Choice: l
load
CDInventory
-----------------------------
```
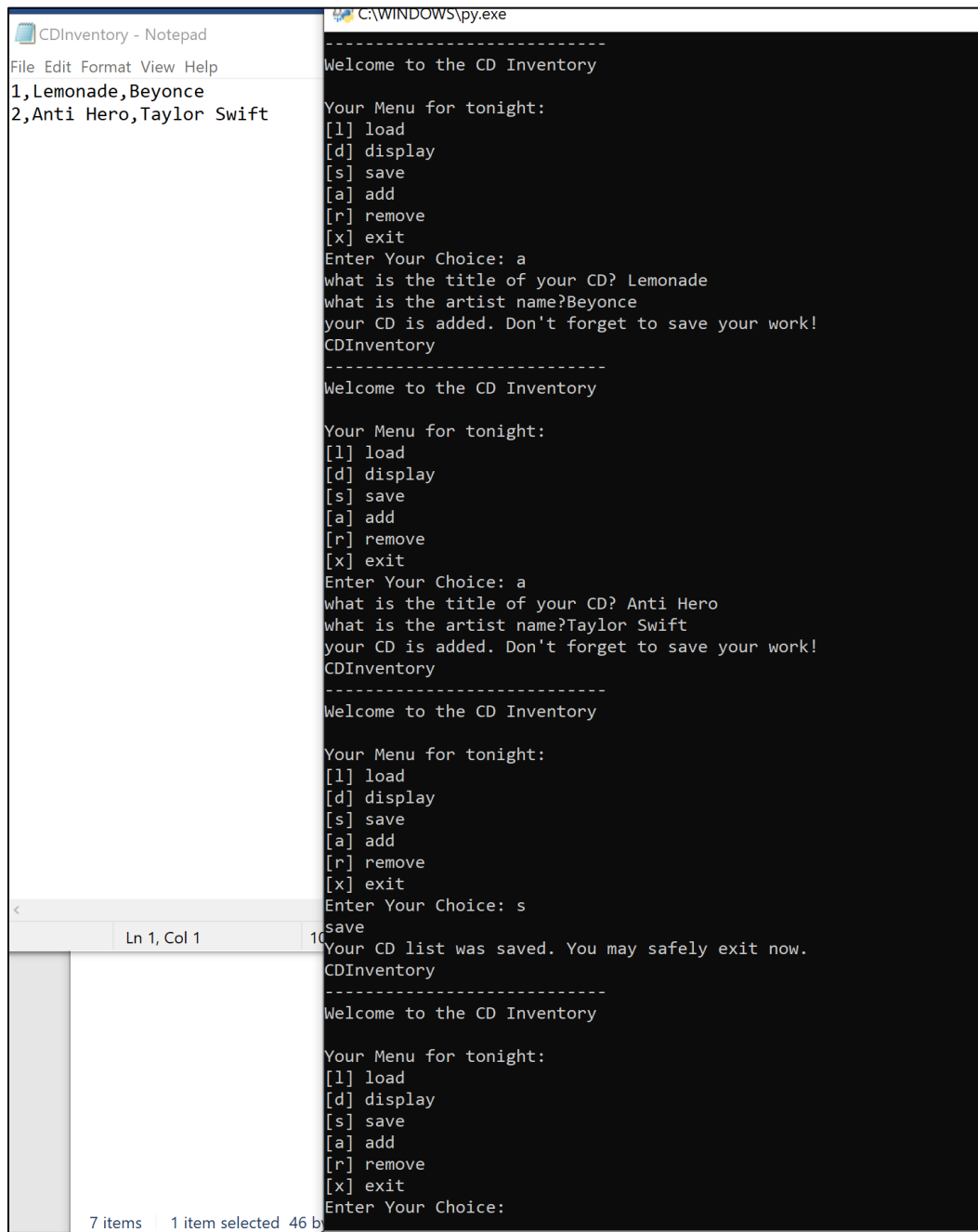
Fig 7e, Load functionality from the script running from Python

The program was also run in terminal window and results were captured in the text file as illustarted in fig 8 (a, b).

Add and save from terminal window:

Fig 8a, Add and save functionalities from the terminal window and results in text file.

Display, delete and save from terminal window:

```
CDInventory - Notepad              C:\WINDOWS\py.exe
File Edit Format View Help         ID Title Artist
1,Lemonade,Beyonce
                                   ___ _____ _____
                                   1,Lemonade,Beyonce
                                   2,Anti Hero,Taylor Swift
                                   CDInventory
                                   ---------------------------
                                   Welcome to the CD Inventory

                                   Your Menu for tonight:
                                   [l] load
                                   [d] display
                                   [s] save
                                   [a] add
                                   [r] remove
                                   [x] exit
                                   Enter Your Choice: r
                                   ///////////////////////////////

                                   you have chosen to delete a row from CD Inventory

                                   ID Title Artist
                                   1,Lemonade,Beyonce
                                   2,Anti Hero,Taylor Swift
                                   enter row # to delete: 2
                                   Row  2  was removed. This is your new inventory:

                                   ID Title Artist

                                   ___ _____ _____
                                   1,Lemonade,Beyonce
                                   CDInventory
                                   ---------------------------
                                   Welcome to the CD Inventory

                                   Your Menu for tonight:
                                   [l] load
                                   [d] display
                                   [s] save
                                   [a] add
                                   [r] remove
                                   [x] exit
                                   Enter Your Choice: s
                                   save
                                   Your CD list was saved. You may safely exit now.
                                   CDInventory
                                   ---------------------------
                                   Welcome to the CD Inventory

                                   Your Menu for tonight:
                                   [l] load
                                   [d] display
                                   [s] save
                                   [a] add
                                   [r] remove
                                   [x] exit
                          Ln 1, Col 1   Enter Your Choice:
```
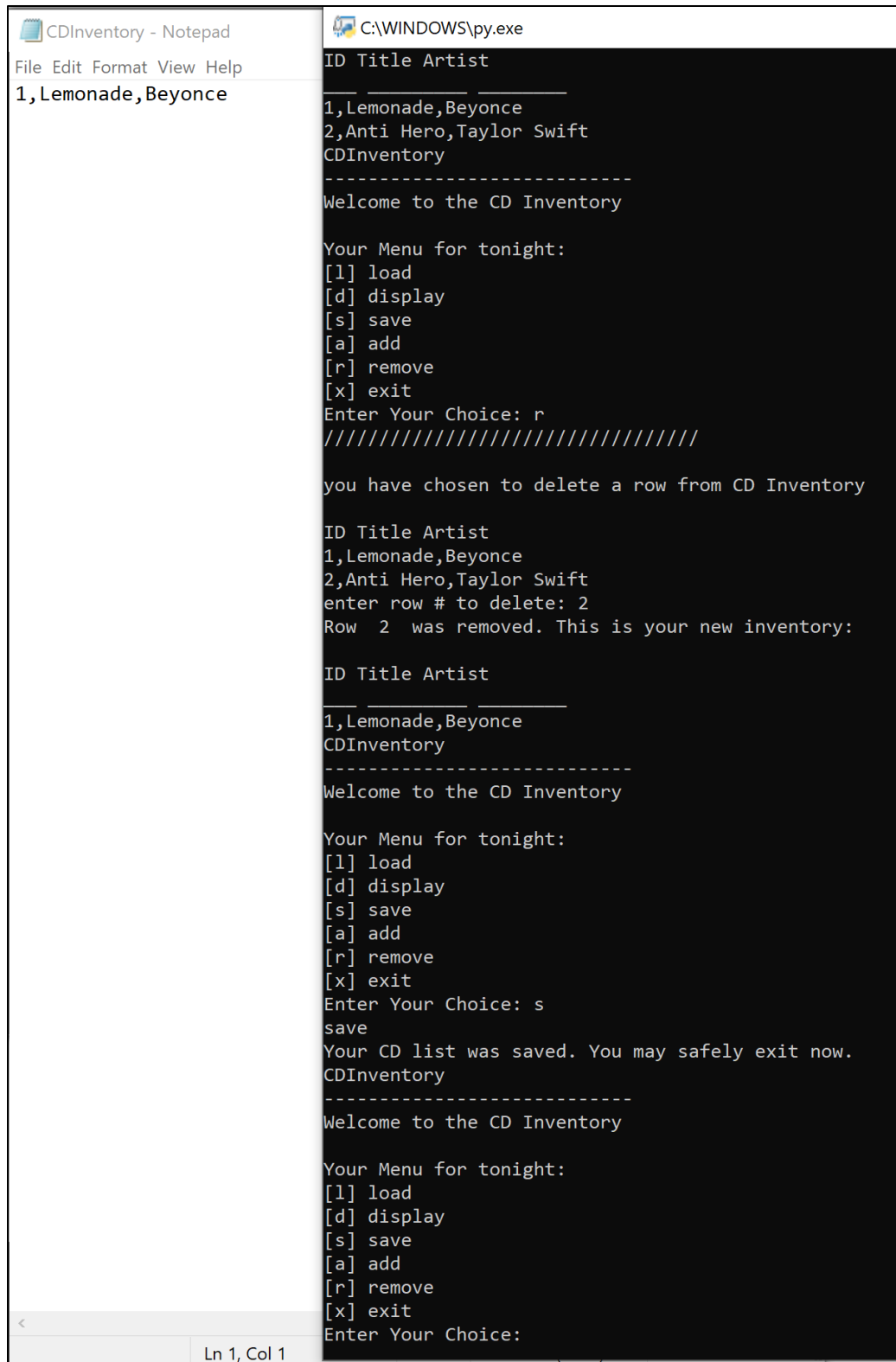
Fig 8a, Display, delete and save functionalities from the terminal window and results in text file.

Conclusion:

In this assignment, I learned how to work with dictionaries and delete an item from a dictionary as well as load from a text file to the python memory.