

Evan Anderson

11/22/2021

Foundations of Programming, Python

Assignment06

# CD Inventory Program (with Functions)

## Introduction

The script in Assignment06 builds out an existing CD Inventory program so that the program utilizes classes and functions. Functions are a way of grouping statements and making this group available via a programmer defined name. Once defined, the function can be called and executed. The purpose of functions are to minimize the size of the script and improve readability. Classes serve a similar purpose by grouping functions, variables and constants. The three classes used in the script are DataProcessor (for processing data), FileProcessor (Processing the data to and from text file) and IO (for handling input and output data).

## Functions Added to the Script

The first function added to the script was `input_data()` within the DataProcessor class. This function first globalizes the three values: `strID`, `strTitle` and `strArtist`. The globalization keeps the values defined outside of the function on a parent level. The function then defines the variables by requesting user input data.

```
19     @staticmethod
20     def input_cd():
21         """Function to request input data from user
22
23         Args:
24             None.
25
26         Returns:
27             None.
28         """
29         global strID
30         global strTitle
31         global strArtist
32         strID = input('Enter ID: ').strip()
33         strTitle = input('What is the CD\'s title? ').strip()
34         strArtist = input('What is the Artist\'s name? ').strip()
```

Figure 1: `input_data()`

The next function added uses input values to define a dictionary (`dicRow`) which is then added to the table (`lstTbl`). The function is also within the DataProcessor class and essentially used the same code as previous iterations.

```
37     @staticmethod
38     def add_cd(strID, strTitle, strArtist):
39         """Function to save dictionary row with input data to table
40
41         Args:
42             strID = undefined value
43             strTitle = undefined value
44             strArtist = undefined value
45
46         Returns:
47             None.
48         """
49         intID = int(strID)
50         dicRow = {'ID': strID, 'Title': strTitle, 'Artist': strArtist}
51         lstTbl.append(dicRow)
52         IO.show_inventory(lstTbl)
```

Figure 2: `add_cd()`

The next function (located within the DataProcessor class) deletes a dictionary row from the table (lstTbl) based on user input. The coding of this function is also very similar to the previous iteration of the program. The only difference is that the Boolean variable (blnCDRemoved) was globalized so the program knows to tell the user the function executed.

```
54     @staticmethod
55     def delete_cd():
56         """Function to delete row from table
57
58         Args:
59             None.
60
61         Returns:
62             None.
63         """
64         global blnCDRemoved
65         intRowNr = -1
66         blnCDRemoved = False
67         for row in lstTbl:
68             intRowNr += 1
69             if row['ID'] == intIDDel:
70                 del lstTbl[intRowNr]
71                 blnCDRemoved = True
72                 break
```

Figure 3: delete\_cd()

The last function added is located within the FileProcessor class. This function opens the selected text document to write the data table into the file. The coding for this was the same as the previously iteration of the program.

```
99     @staticmethod
100     def write_file():
101         """Writes data into file
102
103         Args:
104             None
105
106         Returns:
107             None
108
109         """
110         objFile = open(strFileName, 'w')
111         for row in lstTbl:
112             lstValues = list(row.values())
113             lstValues[0] = str(lstValues[0])
114             objFile.write(','.join(lstValues) + '\n')
115         objFile.close()
116
```

Figure 4: write\_file.

Aside from the addition of the four functions mentioned above, no other updates were made to the program (aside from calling the functions). The following page will show the program in action by executing the different options.

## Testing the Program

l: load inventory from file.

```
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   Graduation (by:Kanye West)
2   99.9% (by:Kaytranada)
3   Current (by:Tame Impala)
4   Yellow Submarine (by:The Beatles)
5   Nevermind (by:Nirvana)
6   Abbey Road (by:The Beatles)
```

Figure 5:

a: Add CD

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

Enter ID: 7

What is the CD's title? Hotel California

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

1   Graduation (by:Kanye West)
2   99.9% (by:Kaytranada)
3   Current (by:Tame Impala)
4   Yellow Submarine (by:The Beatles)
5   Nevermind (by:Nirvana)
6   Abbey Road (by:The Beatles)
7   Hotel California (by:Eagles)
```

Figure 6

i: Display Current Inventory

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

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

1   Graduation (by:Kanye West)
2   99.9% (by:Kaytranada)
3   Current (by:Tame Impala)
4   Yellow Submarine (by:The Beatles)
5   Nevermind (by:Nirvana)
6   Abbey Road (by:The Beatles)
7   Hotel California (by:Eagles)
```

Figure 7

d: Delete Current Inventory

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

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

1   Graduation (by:Kanye West)
2   99.9% (by:Kaytranada)
3   Current (by:Tame Impala)
4   Yellow Submarine (by:The Beatles)
5   Nevermind (by:Nirvana)
6   Abbey Road (by:The Beatles)
7   Hotel California (by:Eagles)
=====

Which ID would you like to delete? 4
The CD was removed
===== The Current Inventory: =====
ID  CD Title (by: Artist)

1   Graduation (by:Kanye West)
2   99.9% (by:Kaytranada)
3   Current (by:Tame Impala)
5   Nevermind (by:Nirvana)
6   Abbey Road (by:The Beatles)
7   Hotel California (by:Eagles)
```

Figure 8

s: Save inventory to file

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

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

1   Graduation (by:Kanye West)
2   99.9% (by:Kaytranada)
3   Current (by:Tame Impala)
5   Nevermind (by:Nirvana)
6   Abbey Road (by:The Beatles)
7   Hotel California (by:Eagles)
=====

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

Figure 9

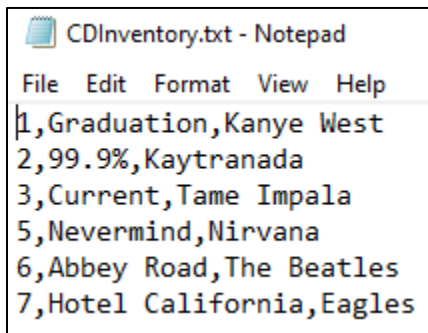
x: exit

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

In [3]:
```

Figure 10

All the options worked! Now let's check the text document:



```
CDInventory.txt - Notepad
File Edit Format View Help
1,Graduation,Kanye West
2,99.9%,Kaytranada
3,Current,Tame Impala
5,Nevermind,Nirvana
6,Abbey Road,The Beatles
7,Hotel California,Eagles
```

Figure 11

It saved as expected!

Now I will execute the program in Terminal.

## Executing in Terminal

```
(base) C:\_FDProgramming\Mod_06\Assignment_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
reloading...
===== The Current Inventory: =====
ID      CD Title (by: Artist)

1       Graduation (by:Kanye West)
2       99.9% (by:Kaytranada)
3       Current (by:Tame Impala)
5       Nevermind (by:Nirvana)
6       Abbey Road (by:The Beatles)
7       Hotel California (by:Eagles)
=====
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? Yellow Submarine
What is the Artist's name? The Beatles
===== The Current Inventory: =====
ID      CD Title (by: Artist)

1       Graduation (by:Kanye West)
2       99.9% (by:Kaytranada)
3       Current (by:Tame Impala)
5       Nevermind (by:Nirvana)
6       Abbey Road (by:The Beatles)
7       Hotel California (by:Eagles)
4       Yellow Submarine (by:The Beatles)
```

Figure 12

```
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       Graduation (by:Kanye West)
2       99.9% (by:Kaytranada)
3       Current (by:Tame Impala)
5       Nevermind (by:Nirvana)
6       Abbey Road (by:The Beatles)
7       Hotel California (by:Eagles)
4       Yellow Submarine (by:The Beatles)
```

Figure 13

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

===== The Current Inventory: =====

ID	CD Title (by: Artist)
1	Graduation (by:Kanye West)
2	99.9% (by:Kaytranada)
3	Current (by:Tame Impala)
5	Nevermind (by:Nirvana)
6	Abbey Road (by:The Beatles)
7	Hotel California (by:Eagles)
4	Yellow Submarine (by:The Beatles)

=====

Which ID would you like to delete? 2

The CD was removed

===== The Current Inventory: =====

ID	CD Title (by: Artist)
1	Graduation (by:Kanye West)
3	Current (by:Tame Impala)
5	Nevermind (by:Nirvana)
6	Abbey Road (by:The Beatles)
7	Hotel California (by:Eagles)
4	Yellow Submarine (by:The Beatles)

=====

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	Graduation (by:Kanye West)
3	Current (by:Tame Impala)
5	Nevermind (by:Nirvana)
6	Abbey Road (by:The Beatles)
7	Hotel California (by:Eagles)
4	Yellow Submarine (by:The Beatles)

=====

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

(base) C:\\_FDProgramming\Mod\_06\Assignment\_06>

Figure 14



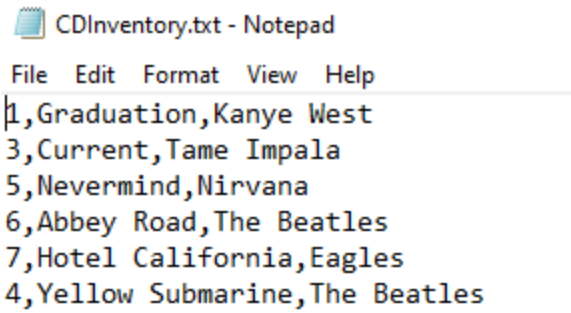


Figure 15

It all worked!