

Andrew Yeo

February 20, 2020

Foundations of Programming: Python

Module 05

Knowledge Document

Intro

In Module 5, we go over what the difference is between a dictionary and a list. We learn the difference between an index and the key and how to read the data file into a dictionary. We go over why it might make sense to organize data in a 2-dimensional way. We go over the what the programming pattern “separation of concerns” is and discuss why a script template is useful. For the assignment, we extend the functionality of the CD Inventory script to use dictionaries instead of lists. We add the functionality of loading existing data as well as the functionality of deleting data.

Details

The script as it was given to us was quite an elegant solution to module 5. The assignment prompt talks about how it is actually more difficult to use somebody else’s code. At this point, it is far more enlightening to begin with someone’s code as it shows me a lot more than how to write functioning code, but subtle elegant solutions and even formatting is put forth for me to learn.

The first few moves I made on the code were relatively easy - initializing the dictionary, as well adding the functionality of loading existing. The part that I had a lot of trouble with was deleting the data. I did not have the time to look into fixing that but I am finally giving more attention to this knowledge documents. (Albeit, begrudgingly, because they seem to do little for learning (where as the development of the script excels fluency in python far more), and what is worse, it takes almost just as much as time to write the knowledge document as it does to write the script. Okay, rant over.) There is a bug where by, the user may only delete the code from starting with ID: 1. In future iterations of the code, I am curious as to *why* this bug is.

The Code Working in Spyder

Below shows the output of the code in Spyder. For the sake of visibility, I have copied the output and reformatted it below. I did believe screen shots management may have gotten messy, so dock points I will put screen shots in the appendix.

```
1. runfile('/Users/andyeyo/Google Drive/Intro to Python/Mod_05/
   Assignment05/CDInventory_Starter.py', wdir='/Users/andyeyo/
   Google Drive/Intro to Python/Mod_05/Assignment05')
2. The Magic CD Inventory
3.
4. [l] load Inventory from file
5. [a] Add CD
6. [i] Display Current Inventory
7. [d] Delete CD from Inventory
8. [s] Save Inventory to file
9. [x] exit
10.
11. l, a, i, d, s or x: a
12.
13.
14. Enter an ID: 1
15.
16. Enter the CD's Title: Alive 2007
17.
18. Enter the Artist's Name: Daft Punk
19. [l] load Inventory from file
20. [a] Add CD
21. [i] Display Current Inventory
22. [d] Delete CD from Inventory
23. [s] Save Inventory to file
24. [x] exit
25.
26. l, a, i, d, s or x: i
27.
28. ID, CD Title, Artist
29. 1, Alive 2007, Daft Punk
30. [l] load Inventory from file
31. [a] Add CD
32. [i] Display Current Inventory
33. [d] Delete CD from Inventory
34. [s] Save Inventory to file
```

```
35. [x] exit
36.
37. l, a, i, d, s or x: s
38.
39. [l] load Inventory from file
40. [a] Add CD
41. [i] Display Current Inventory
42. [d] Delete CD from Inventory
43. [s] Save Inventory to file
44. [x] exit
45.
46. l, a, i, d, s or x: i
47.
48. ID, CD Title, Artist
49. 1, Alive 2007, Daft Punk
50. [l] load Inventory from file
51. [a] Add CD
52. [i] Display Current Inventory
53. [d] Delete CD from Inventory
54. [s] Save Inventory to file
55. [x] exit
56.
57. l, a, i, d, s or x: d
58.
59. Your current inventory is...
60. ID, CD Title, Artist
61. 1, Alive 2007, Daft Punk
62.
63. Enter an ID, CD, or Artist to delete: 1
64. Your current inventory is now
65. ID, CD Title, Artist
66. [l] load Inventory from file
67. [a] Add CD
68. [i] Display Current Inventory
69. [d] Delete CD from Inventory
70. [s] Save Inventory to file
71. [x] exit
72.
73. l, a, i, d, s or x: l
74.
75. [l] load Inventory from file
76. [a] Add CD
77. [i] Display Current Inventory
78. [d] Delete CD from Inventory
79. [s] Save Inventory to file
80. [x] exit
```

```
81.
82. l, a, i, d, s or x: i
83.
84. ID, CD Title, Artist
85. 1, Alive 2007, Daft Punk
86. [l] load Inventory from file
87. [a] Add CD
88. [i] Display Current Inventory
89. [d] Delete CD from Inventory
90. [s] Save Inventory to file
91. [x] exit
92.
93. l, a, i, d, s or x:
```

The Code Working in Terminal

```
1. The default interactive shell is now zsh.
2. To update your account to use zsh, please run `chsh -s /bin/zsh`.
3. For more details, please visit https://support.apple.com/kb/HT208050.
4. (base) Andys-MacBook-Pro:~ andyyeo$ cd desktop/assignment05
5. (base) Andys-MacBook-Pro:assignment05 andyyeo$ python CDInventory_Starter.py
6. The Magic CD Inventory
7.
8. [l] load Inventory from file
9. [a] Add CD
10. [i] Display Current Inventory
11. [d] Delete CD from Inventory
12. [s] Save Inventory to file
13. [x] exit
14. l, a, i, d, s or x: a
15.
16. Enter an ID: 1
17. Enter the CD's Title: Alive 2007
18. Enter the Artist's Name: Daft Punk
19. [l] load Inventory from file
20. [a] Add CD
21. [i] Display Current Inventory
22. [d] Delete CD from Inventory
23. [s] Save Inventory to file
24. [x] exit
25. l, a, i, d, s or x: i
26.
```

```
27. ID, CD Title, Artist
28. 1, Alive 2007, Daft Punk
29. [l] load Inventory from file
30. [a] Add CD
31. [i] Display Current Inventory
32. [d] Delete CD from Inventory
33. [s] Save Inventory to file
34. [x] exit
35. l, a, i, d, s or x: s
36.
37. [l] load Inventory from file
38. [a] Add CD
39. [i] Display Current Inventory
40. [d] Delete CD from Inventory
41. [s] Save Inventory to file
42. [x] exit
43. l, a, i, d, s or x: d
44.
45. Your current inventory is...
46. ID, CD Title, Artist
47. 1, Alive 2007, Daft Punk
48. Enter an ID, CD, or Artist to delete: 1
49. Your current inventory is now
50. ID, CD Title, Artist
51. [l] load Inventory from file
52. [a] Add CD
53. [i] Display Current Inventory
54. [d] Delete CD from Inventory
55. [s] Save Inventory to file
56. [x] exit
57. l, a, i, d, s or x: l
58.
59. [l] load Inventory from file
60. [a] Add CD
61. [i] Display Current Inventory
62. [d] Delete CD from Inventory
63. [s] Save Inventory to file
64. [x] exit
65. l, a, i, d, s or x: i
66.
67. ID, CD Title, Artist
68. 1, Alive 2007, Daft Punk
69. [l] load Inventory from file
70. [a] Add CD
71. [i] Display Current Inventory
72. [d] Delete CD from Inventory
```

```
73. [s] Save Inventory to file
74. [x] exit
75. l, a, i, d, s or x: x
76.
77. (base) Andys-MacBook-Pro:assignment05 andyyeo$
```

Summary

We look into dictionaries and how python uses it to manage data. The CD Inventory script was extended to add the functionality of loading a script and deleting entries from the inventory.

Functionality that could be included in further development include the following:

- Deleting by song title, or artist name and not just ID
- An “undo” and “redo” feature for the user

Questions worth investigating:

- When would dictionaries be useful over lists or tuples?
- How much will I get docked for being honest about the utility (or lack thereof) of these knowledge documents?

References

Appendix

Made using [Planet B's Syntax Highlighter](#)

```
1. #-----#
2. # Title: CDInventory.py
3. # Desc: Starter Script for Assignment 05
4. # Change Log: (Andrew Yeo, 2020-
   Feb-18, First Iteration of Fixing the Script)
5. # Andrew yeo, 2020-Feb-18, Created File
6. #-----#
7.
8. # Declare variables
9.
10. strChoice = '' # User input
11. lstTbl = [] # list of lists to hold data
12. # TODO replace list of lists with list of dicts
13. dicRow = {}
14. lstRow = [] # list of data row
15. strFileName = 'CDInventory.txt' # data storage file
16. objFile = None # file object
17.
18. # Get user Input
19. print('The Magic CD Inventory\n')
20. while True:
21.     # 1. Display menu allowing the user to choose:
22.     print('[l] load Inventory from file\n[a] Add CD\n[i] Display
   Current Inventory')
23.     print('[d] Delete CD from Inventory\n[s] Save Inventory to fi
   le\n[x] exit')
24.     strChoice = input('l, a, i, d, s or x: ').lower() # convert
   choice to lower case at time of input
25.     print()
26.
27.     if strChoice == 'x':
28.         # 5. Exit the program if the user chooses so
29.         break
30.
31.     if strChoice == 'l':
32.         # TODO Add the functionality of loading existing data
33.         objFile = open(strFileName, 'r')
34.         for row in objFile:
35.             lstRow = row.strip().split(',')
36.             dicRow = {'id': int(lstRow[0]), 'CD Title': lstRow[1]
   , 'Artist': lstRow[2]}
37.             lstTbl.append(dicRow)
38.         objFile.close()
```



```

39.         pass
40.
41.     elif strChoice == 'a': # no elif necessary, as this code is
    only reached if strChoice is not 'exit'
42.         # 2. Add data to the table (2d-
    list) each time the user wants to add data
43.         strID = input('Enter an ID: ')
44.         strTitle = input('Enter the CD\'s Title: ')
45.         strArtist = input('Enter the Artist\'s Name: ')
46.         intID = int(strID)
47.         dicRow = {'id': intID, 'CD Title': strTitle, 'Artist': strArtist}
48.         lstTbl.append(dicRow)
49.
50.     elif strChoice == 'i':
51.         # 3. Display the current data to the user each time the user
    wants to display the data
52.         print('ID, CD Title, Artist')
53.         for row in lstTbl:
54.             print(*row.values(), sep = ', ')
55.
56.     elif strChoice == 'd':
57.         # TODO Add functionality of deleting an entry
58.         # This part displays the current inventory for the user to
    be able to see what they can delete
59.         print('Your current inventory is...')
60.         print('ID, CD Title, Artist')
61.         for row in lstTbl:
62.             print(*row.values(), sep = ', ')
63.
64.         # This part prompts the user to an ID to delete
65.         delID = input('Enter an ID, CD, or Artist to delete: ')
66.
67.         # This part loops through all of the rows of the inventory
    "lstTbl"
68.         for i in range(len(lstTbl)):
69.             if lstTbl[i]
    ['id'] == int(delID): # If condition is triggered if the key of dictionary
    'ID' matches what user has inputted
70.                 del lstTbl[i] # Deletes that row
71.             # elif lstTbl[i]
    ['CD Title'] == delID: # If condition is triggered if the key of dictionary
    'ID' matches what user has inputted
72.             # del lstTbl[i] # Deletes that row

```

```

73. #                 elif lstTbl[i]
   ['Artist'] == delID: # If condition is triggered if the key of di
   ctionary 'ID' matches what user has inputted
74. #                 del lstTbl[i] # Deletes that row
75.                     break
76.
77.     # This part displays the inventory after the user has del
   eted the entry
78.     print('Your current inventory is now')
79.     print('ID, CD Title, Artist')
80.     for row in lstTbl:
81.         print(*row.values(), sep = ', ')
82.     pass
83.
84.     elif strChoice == 's':
85.         # 4. Save the data to a text file CDInventory.txt if the
   user chooses so
86.         objFile = open(strFileName, 'w')
87.         for row in lstTbl:
88.             strRow = ''
89.             for item in row.values():
90.                 strRow += str(item) + ','
91.             strRow = strRow[:-1] + '\n'
92.             objFile.write(strRow)
93.         objFile.close()
94.     else:
95.         print('Please choose either l, a, i, d, s or x!')

```

Screen Shots of the Code Working in Spyder

```
Python 3.7.0 (default, Jun 28 2018, 07:39:16)
Type "copyright", "credits" or "license" for more information.

IPython 7.8.0 -- An enhanced Interactive Python.

In [1]: runfile('/Users/andyeyo/Google Drive/Intro to Python/Mod_05/Assignment05/CDInventory_Starter.py', wdir='/Users/andyeyo/Google Drive/Intro to Python/Mod_05/Assignment05')
The Magic CD Inventory

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

l, a, i, d, s or x: a

Enter an ID: 1

Enter the CD's Title: Alive 2007

Enter the Artist's Name: Daft Punk
[\] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] Delete CD from Inventory
[s] Save Inventory to file
[x] exit

l, a, i, d, s or x: i

ID, CD Title, Artist
1, Alive 2007, Daft Punk
[\] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] Delete CD from Inventory
[s] Save Inventory to file
[x] exit

l, a, i, d, s or x: s

[\] load Inventory from file
[a] Add CD
```

```
[\] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] Delete CD from Inventory
[s] Save Inventory to file
[x] exit

l, a, i, d, s or x: d

Your current inventory is...
ID, CD Title, Artist
1, Alive 2007, Daft Punk

Enter an ID, CD, or Artist to delete: 1
Your current inventory is now
ID, CD Title, Artist
[\] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] Delete CD from Inventory
[s] Save Inventory to file
[x] exit

l, a, i, d, s or x: l

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

l, a, i, d, s or x: i

ID, CD Title, Artist
1, Alive 2007, Daft Punk
[\] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] Delete CD from Inventory
[s] Save Inventory to file
[x] exit

l, a, i, d, s or x:
```

Screen Shots of the Code Working in Terminal

```
Assignment05 — -bash — 101x53
## cd /Users/andyeyo/desktop/assignment04 ##
Last login: Tue Feb 11 20:38:48 on ttys000
Restored session: Tue Feb 11 20:39:24 PST 2020

The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
(base) Andys-MacBook-Pro:~ andyeyo$ cd desktop/assignment05
(base) Andys-MacBook-Pro:assignment05 andyeyo$ python CDInventory_Starter.py
The Magic CD Inventory

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] Delete CD from Inventory
[s] Save Inventory to file
[x] exit
l, a, i, d, s or x: a

Enter an ID: 1
Enter the CD's Title: Alive 2007
Enter the Artist's Name: Daft Punk
[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] Delete CD from Inventory
[s] Save Inventory to file
[x] exit
l, a, i, d, s or x: i

ID, CD Title, Artist
1, Alive 2007, Daft Punk
[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] Delete CD from Inventory
[s] Save Inventory to file
[x] exit
l, a, i, d, s or x: s

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] Delete CD from Inventory
[s] Save Inventory to file
[x] exit
l, a, i, d, s or x: d

Your current inventory is...
ID, CD Title, Artist
1, Alive 2007, Daft Punk
Enter an ID, CD, or Artist to delete: 1
Your current inventory is now
```

```
Assignment05 — -bash — 101x28
ID, CD Title, Artist
[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] Delete CD from Inventory
[s] Save Inventory to file
[x] exit
l, a, i, d, s or x: l

[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] Delete CD from Inventory
[s] Save Inventory to file
[x] exit
l, a, i, d, s or x: i

ID, CD Title, Artist
1, Alive 2007, Daft Punk
[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
[d] Delete CD from Inventory
[s] Save Inventory to file
[x] exit
l, a, i, d, s or x: x

(base) Andys-MacBook-Pro:assignment05 andyyeo$
```