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Course name - IT FDN 110 B Au 22: Foundations Of Programming: Python
Assignment 05

Introduction

This module is an extension to the data structures learnt in the Module 04. We will continue to play around further with Lists. There is also a new data structure Dictionary that basically helps us to organize our data in key:value pair. Afterwards we will explore how to make your code modular by defining some functions to break down your code for the reusability and simplicity. Finally we will learn how to use GitHub for version control.

Topics

1. LAB05_A

This program is in continuation with the exercises done in the previous module. We are providing the user a Menu with 5 options: Add a row to list, write to a file, read from a file into a list, display the contents and exit.
If the user enters 'a', he is asked with an input to enter an artist name and title. The corresponding attributes are added to a list row which is then appended to a list of lists.
If the user enters 'w', we write the list of lists to a file. We first iterate over the list of lists, initialize a variable with empty data, iterate over the list row, convert to string and add a ',' separator, take that entire string and write to file.
If the user enters 'r', we simply read from the file into the list of lists. For this to happen, we clear the contents of the the list of lists, iterate line by line in the file, remove the extra spaces, split by ',' separator and append it to the list of lists.
If the user enters 'd', we display the contents on the console. We first iterate row by row over the list of lists, unpack it into tuples and print out the results.

2. LAB05_B

This program is in continuation with the exercises done in the previous module. We are trying to replicate what we have covered in the previous exercise into the dictionary structure.
We are providing the user a Menu with 5 options: Add a row to list, write to a file, read from a file into a list, display the contents and exit.

If the user enters ‘a’, he is asked with an input to enter an artist name and title. The corresponding attributes are added to a dictionary row which is then appended to a list of lists.
If the user enters ‘w’, we write the list of lists to a file. We first iterate over the list of dict, initialize a variable with empty data, iterate over the list row, convert to string and add a ‘,’ separator, take that entire string and write to file.
If the user enters ‘r’, we simply read from the file into the list of dict. For this to happen, we clear the contents of the the list of dict, iterate line by line in the file, remove the extra spaces, split by ‘,’ separator and append it to the list of lists.
If the user enters ‘d’, we display the contents on the console. We first iterate row by row over the list of lists, unpack it into tuples and print out the results.

3. Assignment

Spyder ouptut

```
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: The Runrig Wheel
Enter the Artist's Name: Runrig
[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: i

ID, CD Title, Artist
1, The Runrig Wheel, Runrig
[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

Enter the CD you want to delete: 1
[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
[l] load Inventory from file
[a] Add CD
[i] Display Current Inventory
```

Terminal output

```
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: 2
Enter the CD's Title: Macbeth
Enter the Artist's Name: Shakespeare
[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: i

ID, CD Title, Artist
2, Macbeth, Shakespeare
[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

Enter the CD you want to delete: 2
[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
[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
```

In this exercise we are working with a user menu that includes 6 options as described in the screenshot above.

If the user enters ‘l’, we load the existing data from file into the list of dicts. We are basically initializing our list of dicts from the inventory data in the file.
If the user enters ‘a’, the user is asked to enter values for ID, CD Title and Artist Name. Then we append these values first by storing in a dict and then to the list of dicts.
If the user enters ‘i’, we display the current data from the inventory file to the user.

If the user enters ‘d’, the user is given a prompt to enter a key value/ CD ID that he/she wants to delete. Then we iterate over the list of dicts, look for the key that matches with the user input. If there is a match, we store the position of that row and then delete it from the list. An important thing to note here is that file will still contain the corresponding row until the user enters ’s’ to save the data. This is done in order to avoid any data loss if user removed it by mistake.
If the user enters ’s’, this means we are saving the data/inventory to the file.
If the user enters ‘x’, this means he is exiting from the program and comes out of the loop.

Summary

This module explains us about how to work with list, dictionaries and combine them together. We explored a couple of different operations on how to integrate with a file. Then it explained us about the version control via GitHub.

```
Choose from the following options in the Menu:
1 = Add CD
2 = Display Current Inventory
3 = Save Inventory to file
4 = Exit
Enter an input: 1
Enter an id: 3
Enter the CD Title: Bad
Enter the Artist Name: Michael Jackson
===========================
Choose from the following options in the Menu:
1 = Add CD
2 = Display Current Inventory
3 = Save Inventory to file
4 = Exit
Enter an input: 2
 ID  | CD Title           | Artist Name        |

 1   | The Big Wheel      | Runrig             |

 3   | Bad                | Michael Jackson    |
===========================
Choose from the following options in the Menu:
1 = Add CD
2 = Display Current Inventory
3 = Save Inventory to file
4 = Exit
Enter an input: 3
Writing contents to the file
===========================
Choose from the following options in the Menu:
1 = Add CD
2 = Display Current Inventory
3 = Save Inventory to file
4 = Exit
Enter an input: 4
```