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Foundations of Programming (Python)

Assignment 05

CD Inventory: Dictionaries

Introduction

For Assignment 05, I modified the starter script of CDInventory.py that utilized lists to save user input that included an ID number, a CD name, and the artist’s name. I converted the lists that contained this data in dictionaries for this week and saved those dictionaries as 2D lists.

Concepts and Tools Used

Lists and dictionaries have many similarities, such as: they are mutable (they can be changed throughout the script), they can theoretically contain infinite amounts of information separated by commas, and can contain strings, lists, tuples, and dictionaries. They appear different because a list uses parenthesis to enclose their data, while dictionaries use brackets. The main difference is lists are made up of indexes and dictionaries, which are mapping types, are contain pairs of ‘keys’ and ‘values,’ each value having a corresponding key and are separated by commas. In this lab, I saved my dictionaries to 2D lists and used tools from past modules such as saving data to text files, getting user input, and displaying data back. Something new I encountered this lab was adding and editing another person’s code. All labs from this module contained starter code that had TODO’s, as well as pseudocode that explained their logic.

For Lab05\_A, I used starter code and added lists that contained song titles and their corresponding artists, and I also loaded data from a file into a list. The follow page contains an image of the added code in Spyder:

![Text

Description automatically generated]()***Figure 1:*** *Lab05\_A code in Spyder*

The portion under the pseudocode ‘# List to File’ loads data from the file: ‘CDInventory.txt.’ Working with files, whether opening, writing, loading, or saving, it’s important to minimize the amount of time the file is open. Reducing the access time of files is done by containing the code within a loop so that it closes once the loop is terminated.

For Lab05\_B, I used the provided finished code for Lab05\_A, and altered the lists that contained song and artist data to actually be dictionaries. I defined the strArtist and strTitle the same, but I input that data into a dictionary using these brackets” {}. I saved the numerous dictionaries to a list. One difference between Lab05\_A and Lab05\_B is the use of nested for loops because I had to iterate through the list, as well as through the dictionaries that were stored within the lists. This became a little confusing and having the pseudocode there ensured my logic was correct. Below is an image of the script for Lab05\_B:

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***Figure 2:*** *Lab05\_B code in Spyder*

In order to print the values, which were the CD Titles and Artist Name, I had to include .values() when I printed the individual rows when displaying data. Converting to dictionaries was not as simple as I thought it would be, it required minor tweaks such as the one just mentioned in order to have a properly working script.

Final Code: CDInventory with dictionaries

For the final code, I used a starter code as I had done in the labs. This was different as the structure was not in the order I would have had it. It had confused me until I realized that majority of the code in this script was independent of one another. Began by identifying the variables I would be using such as the dictionary variable and the list of dictionaries that contained it. I then asked for user input to obtain and ID, CD Title, and Artist Name. I added these into my dictionary variable and appended to my list of dictionaries. I then loaded existing data like I did in Lab05\_A, saved text file, and also allow user to delete entries by using ID numbers. Below is my final code:

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***Figure 3:*** *CDInventory code in Spyder lines 1-56*

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***Figure 4:*** *CDInventory code in Spyder lines 56-85*

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***Figure 5:*** *CDInventory run in Anaconda Prompt*

*![Text

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*![Graphical user interface, text, application

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***Figure 7:*** *CDInventory text file containing dictionary data*

Summary

Converting the lists to dictionaries was not too difficult but having to modify small changes throughout the starter script proved a little more difficult. I can see the benefits of working off of someone else’s code as I gained insights I may not have had I worked on my own script. The drawback was it took some more time to get adjusted the program because I had to understand what the person before me did. My main struggle was deleting an entry. I had to take my time to visualize the order I had to go in which was iterate through the list, iterate through the dictionary, locate the keyword, which was the ID from the user input, and use that to delete the dictionary from my list.