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Foundations of Programming: Python

Assignment 08

Object Oriented Programming

# Introduction

This is a script which we need to use the concept of OOP(object oriented programming) to complete the CDInventory script. I studied the Mod\_08 materials and tried to understand these concepts and make the script work. I am trying to create classes to define the objects we want, and write methods and create attributes, instantiate Objects from classes.

# Explanation of the script

For the CD object, I created three attributes: cd\_id, cd\_title, and cd\_artist. First, I need to initiate them by using \_\_init\_\_. After that, I tried to define 3 getters and 3 setters for those 3 attributes (Figure 1). Since I don’t want any user to change or access these attributes, I made them private. Last, I tried to return a string which include CD ID, CD title, and Artist if we call this function.

In class IO and class FileIO, I tried to define all functions in the classes as staticmethod. Since we want to do lots of data processing work here, staticmethod allow me to organize the statements but no changes or access to the class state.

In the script starter, there is no empty dict = {} in the beginning, I am assuming we are not able to use dict to store the data. However, using lstOfCDObjects to store the CD objects is more convenient. After some data processing (adding more and more CD data), we will have a list with the form lstOfCDObjects = [CDobj1, CDobj2, CDobj3……]. We can display this CD object list by using a simple for-loop (Figure 2), the result is human readable. Write and read function could also be done in similar way. (Figure 3 & 4)

Text

Description automatically generated

Figure 1 – Setter/Getter/Method

Text

Description automatically generated

Figure 2 -For-loop to show inventory

Text

Description automatically generated

Figure 3 – Read function

Text

Description automatically generated

Figure 4 – Write function

# Save your script

File path of my script is C:\\_FDP\Assignment08\CD\_Inventory.py (Figure 5)

Graphical user interface, application

Description automatically generated

Figure 5 - File path

# Run your script/Verify correct functioning

I used Spyder to run this script first.

1. Press ‘a’ to add CD. After adding 2 CD datasets, it can show the correct CD storage in the memory. (Figure 6)

Text

Description automatically generated

Figure 6 – Adding CD test

1. Press ‘i’ to display the CD information. No errors. (Figure 7)

Text

Description automatically generated with medium confidence

Figure 7 – CD display test

1. Press ‘s’ to save CD data to txt file (Figure 8). The txt file has correct information of CDs. (Figure 9)

Text

Description automatically generated

Figure 8 – CD saving test

Text

Description automatically generated

Figure 9 – Text file result

1. Press ‘l’ to load the data from text file. It shows the correct information of CDs. (Figure 10)A picture containing text

   Description automatically generated

Figure – File loading test

1. I tried to enter non-numeric value for CD ID to test error handling. Error message displayed correctly so I have to enter a number. (Figure 11)

Text

Description automatically generated

Figure 11 – Error handling: non-numeric CD value

1. I entered ‘test’ in main menu but there is no option called ‘test’. Error message displayed correctly. (Figure 12)

Graphical user interface, text

Description automatically generated

Figure 12 – Error handling: wrong option in main menu

# Run your script (Terminal Window)

I used Anaconda Prompt to run the scripts again with different data input.

1. Add CD information: (Figure 13)

Text

Description automatically generated

Figure 3 - Adding CD test (terminal)

1. Display CD information: (Figure 14)

Text

Description automatically generated

Figure 14 - CD display test (terminal)

1. Save the CD data to text file. (Figure 15 & 16)

Text

Description automatically generated

Figure 5 - CD saving test (terminal)

Graphical user interface, text

Description automatically generated

Figure 16 - Text file result (terminal)

1. Load data from text file. (Figure 17)

Text

Description automatically generated

Figure 7 – File loading test (terminal)

1. Enter wrong options in main menu: (Figure 18)

Text

Description automatically generated

Figure 18 - Error handling: wrong option in main menu (terminal)

1. Enter non-numeric value for CD ID input. (Figure 19)

Text

Description automatically generated

Figure 19 - Error handling: non-numeric CD value (terminal)

The scripts work perfectly!

# GitHub link for Assignment

[chhsieh0630/Assignment\_08: IT FDN 110 B Wi 22: Foundations Of Programming: Python (Assignment 08) (github.com)](https://github.com/chhsieh0630/Assignment_08)

# Summary

In this assignment, I learned the concept of object-oriented programming. However, the concept for me is still vague. I am still a bit confused about the getter and setter things. It could be hard to find out what was wrong in the script if I made mistakes here, because I was not pretty sure which way was the correct way to follow. Trying to understand the relationship between property/setter/method is not an easy job, and I don’t still fully understand that! It would better if we could take more time or lectures in this in the future.