Rakshit Govil
November 21st, 2024
Classes and Objects
Assignment 07
GitHub URL: https://github.com/rakgov21/IntroToProg-Python-Mod07

Introduction to Programing with Python

(Classes and Objects)

Introduction

In this assignment I will explain the steps I used to create a python script that provides user with 4 menu options to choose from to register a student to the course.
First the content of the “Enrollments.json” file is read and shown in a list of dictionary rows format to make the user aware of students that have already been registered before. Then, when option-1 is chosen it allows user to enter students details which are students first name, last name and course name. In option-2, user is presented with a comma-separated string formatting the collected data in option-1 using the print () function and displays the output in a 2-D list of dictionaries table format. In option-3, the program opens a file named "Enrollments.json" in write mode using the open () function. It writes the content of the option-2 output to the file using the write () function, then file is closed using the close () method and displays the content of the JSON file as an output. And at the end when option-4 is chosen the program ends. Also, if user enters any other menu option apart from 1 to 4 then “Invalid option chosen” is displayed and the user is asked to enter the correct option.
The script incorporates elements such as taking input from a user for three of the variables and then using string formatting, conditional logic, while loops, Lists, Dictionaries, Error Handling, Functions, Classes, Objects and JSON file writing and reading.

Drafting the Code

Defining the Constant

I began writing my code in the PyCharm IDE. The script needed following constants to be defined:

- MENU a string data type which is defined as a block of text which is the menu of options.
- FILE_NAME a string data type which is defined as “Enrollments.json”

Defining the Variables

Juniper Business Use Only

The script needs a total of 2 variables to be defined. The variables are defined as following:

- menu_choice a string data type which stores the menu option chosen by the user to execute.
- students as a list data type which is used for creating 2-D list tables (lists of dictionaries).

Performing Operations

The script performs a total of six operations. Which are defined as below:

- First the script opens the already present "Enrollments.json" file to read the content of the file defined under function read_data_from_file and store it in a 2-D list of dictionary table format.
- Second is when the user chooses Menu Option-1 where the the function input_student_data is called, and the user is then prompted to enter students first name, last name and the course name. And the information entered by the user is added to the "student_data" dictionary and then that data is appended to the "student" list to create a 2-D list of dictionary rows table.
- Third is when the user chooses Menu Option-2 where function output_student_courses is called which prints out in a statement all the students that have been registered for the course.
- Fourth is when the user chooses Menu Option-3 function write_data_to_file is called where the content generated in option-2 is written to a JSON file named "Enrollments.json" and the content of same is displayed to the user.
- Fifth is when the user chooses Menu Option-4, and the while loop breaks and displays user that program has ended.
- And, if the user chooses any option other than between 1 to 4 then script presents user with "Invalid choice please choose options between 1 to 4" statement.

Saving the Script

I created a folder in Documents/Python_Files called "Module_7_Assignment" and saved my python script as "Assignment07.py".

Testing the Code

I decided to use the Assignment07_Starter.py file. Where I worked on adding all the additional requirements that were there for Assignment07 which included adding two new classes Persons and Students where first_name and last_name properties are added to the constructor along with creating the getter and setter for both the properties and then the Students class inherits from the Persons class both the properties and adds course_name property along with creating the getter and setter for the new course_name. Then, I ran the entire script at once and the

Juniper Business Use Only

code ran as expected for me (Fig-1). I wrote and tested my script in PyCharm. Then at the end I worked on adding the other requirement for the assignment which is adding the structured error handling for some specific parts along with Docstrings which were mentioned in the assignment asks.

```
/Users/rgovil/Documents/Python_Files/Module_3_Assignment/Module03/.venv/bin/python /Users/rgovil/Documents/Python_Files/Module_7_Assignment/Module07/Assig

---- Course Registration Program ----
  Select from the following menu:
    1. Register a Student for a Course
    2. Show current data
    3. Save data to a file
    4. Exit the program
----------------------------------------

Enter your menu choice number: 1
What is the student's first name? Rakshit
What is the student's last name? Govil
What is the student's Course Name? Python 100

---- Course Registration Program ----
  Select from the following menu:
    1. Register a Student for a Course
    2. Show current data
    3. Save data to a file
    4. Exit the program
----------------------------------------

Enter your menu choice number: 2
--------------------------------------------------
Student Bob Smith is enrolled in Python 100
Student Sue Jones is enrolled in Python 100
Student Rakshit Govil is enrolled in Python 100
--------------------------------------------------

---- Course Registration Program ----
  Select from the following menu:
    1. Register a Student for a Course
    2. Show current data
    3. Save data to a file
    4. Exit the program
----------------------------------------

Enter your menu choice number: 3

---- Course Registration Program ----
  Select from the following menu:
    1. Register a Student for a Course
    2. Show current data
    3. Save data to a file
    4. Exit the program
----------------------------------------

Enter your menu choice number: 4
Program Ended
```

```
[
    {
        "FirstName": "Bob",
        "LastName": "Smith",
        "CourseName": "Python 100"
    },
    {
        "FirstName": "Sue",
        "LastName": "Jones",
        "CourseName": "Python 100"
    },
    {
        "FirstName": "Rakshit",
        "LastName": "Govil",
        "CourseName": "Python 100"
    }
]
```


Fig-1: Screenshot showing the testing of the entire script and output of JSON File

Running the Script on Terminal

I opened the terminal console on my mac, navigated to the correct folder using the cd (change directory) and ls (list files) commands. Then I used the python3 command along with the file name, Assignment07.py to run the script. And the script presented all the outputs and JSON File as expected. (Fig-2)

```
rgovil@rgovil-mbp ~ % cd Documents
rgovil@rgovil-mbp Documents % ls
Python_Files
rgovil@rgovil-mbp Documents % cd Python_Files
rgovil@rgovil-mbp Python_Files % ls
Module_1_Assignment     Module_2_Assignment     Module_3_Assignment     Module_4_Assignment     Module_5_Assignment     Module_6_Assignment     Module_7_Assignment
rgovil@rgovil-mbp Python_Files % cd Module_7_Assignment
rgovil@rgovil-mbp Module_7_Assignment % ls
Module07
rgovil@rgovil-mbp Module_7_Assignment % cd Module07
rgovil@rgovil-mbp Module07 % ls
Assignment07.py         Enrollments.json
rgovil@rgovil-mbp Module07 % python3 Assignment07.py

---- Course Registration Program ----
  Select from the following menu:
    1. Register a Student for a Course
    2. Show current data
    3. Save data to a file
    4. Exit the program
----------------------------------------

Enter your menu choice number: 1
What is the student's first name? Rakshit
What is the student's last name? Govil
What is the student's Course Name? Python 100

---- Course Registration Program ----
  Select from the following menu:
    1. Register a Student for a Course
    2. Show current data
    3. Save data to a file
    4. Exit the program
```

```
Enter your menu choice number: 2
-------------------------------------------------
Student Bob Smith is enrolled in Python 100
Student Sue Jones is enrolled in Python 100
Student Rakshit Govil is enrolled in Python 100
-------------------------------------------------

---- Course Registration Program ----
  Select from the following menu:
    1. Register a Student for a Course
    2. Show current data
    3. Save data to a file
    4. Exit the program
----------------------------------------

Enter your menu choice number: 3

---- Course Registration Program ----
  Select from the following menu:
    1. Register a Student for a Course
    2. Show current data
    3. Save data to a file
    4. Exit the program
----------------------------------------

Enter your menu choice number: 4
Program Ended
rgovil@rgovil-mbp Module07 %
```

```
1  [
2      {
3          "FirstName": "Bob",
4          "LastName": "Smith",
5          "CourseName": "Python 100"
6      },
7      {
8          "FirstName": "Sue",
9          "LastName": "Jones",
10         "CourseName": "Python 100"
11     },
12     {
13         "FirstName": "Rakshit",
14         "LastName": "Govil",
15         "CourseName": "Python 100"
16     }
17 ]
```

Fig-2: Screenshot showing commands to locate proper folder and running Assignment07.py

Summary

Using the Module 07 documentation and videos, and supplemental websites. I was able to successfully create a python script with all the required considerations. The program demonstrates my knowledge about programming tools and techniques including things like string formatting, conditional logic, while loops, using and creating Lists and Dictionaries, Functions, Classes, Objects and JSON file writing and reading along with Error Handling.