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IT FDN 110 A Sp 25: Foundations of Programming: Python

Assignment06

Demonstration of Python Script Classes and Functions

Introduction

In this document I will describe assignment code specification, requirements software tools, testing, and results in the below sections. Python script will consume string type inputs from user, predefined constant values. The script will generate results visually and in a JSON file. The script will prompt the user to provide string inputs that will contain the student's first name, last name and in return the full name, course name will be generated.

Software Application

The Python Script in this project is written and executed using IDLE 3.13.3 from which a new file is started. In the new file Python Script will be written. The script code will be tested using IDLE Shell window and windows-built command prompt. More details of this software script will be provided in coming sections. The Python provides neat way to open and store in to file.

(Real Python: [Python Classes: The Power of Object-Oriented Programming – Real Python](#), May 29, 2025) (External Site)

Imports

In this assignment import json was done

Import json

Python Script data

This Python script contains constant, string, floats and non type object. Below all data types that will be used in script are shown.

Constant data

MENU: str = ""

FILE_NAME: str = "Enrollments.json"

Define Constants

FILE_NAME: str = "Enrollments.csv"

FILE_NAME: str = "Enrollment.json"

Define variables and constants

menu_choice: str = " # Hold the choice made by the user.

students: list = [] # a table of student data

Classes and functions created in this assignment

class FileProcessor:

This class processes read and write, and also checks for error for file opening related during read and write

Class FileProcessor Functions

def read_data_from_file(file_name: str, student_data: list):

This function reads from the JSON file into list of dictionary in to student_data

def write_data_to_file(file_name: str, student_data: list):

This function writes data into JSON file from list of dictionary in the student_data.

class IO:

This class IO provides functions that outputs related error, menu, data and inputs from user for data collection

Class IO function

def output_error_messages(message: str, error: Exception = None):

def output_menu(menu: str):

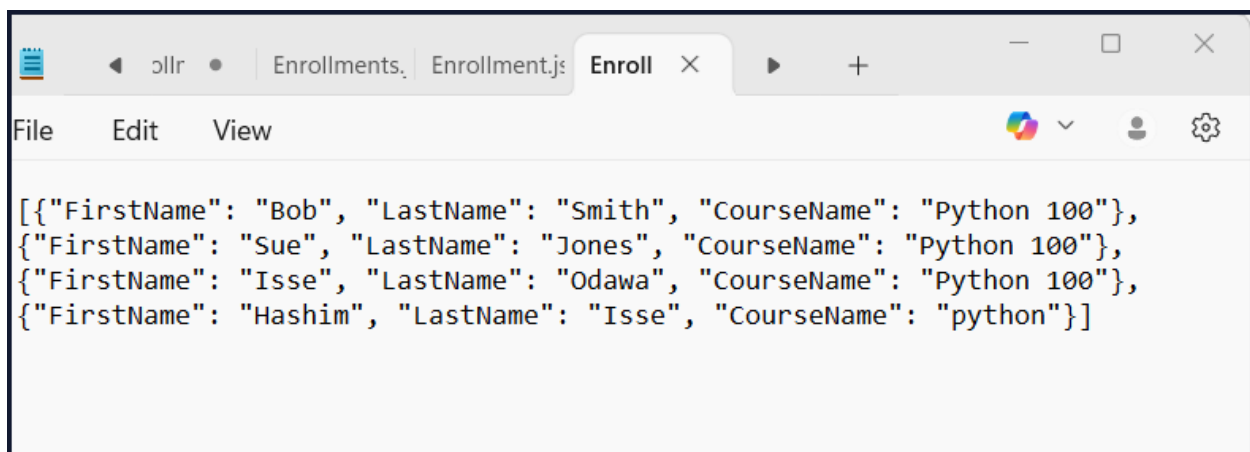
def output_students_courses(student_data: list):

def input_student_data(student_data: list):

def input_menu_choice() -> str:

def output_students_courses(student_data: list):

This python script uses while (true) condition to allow code to execute the if and elif statements for menu options defined in above constant value declaration. Between while(true) and break, there four if statements. The first if statements is as follow, which takes inputs from user, and puts data in enrollment.json data variable, which can be used to store in to a datafile or display later.



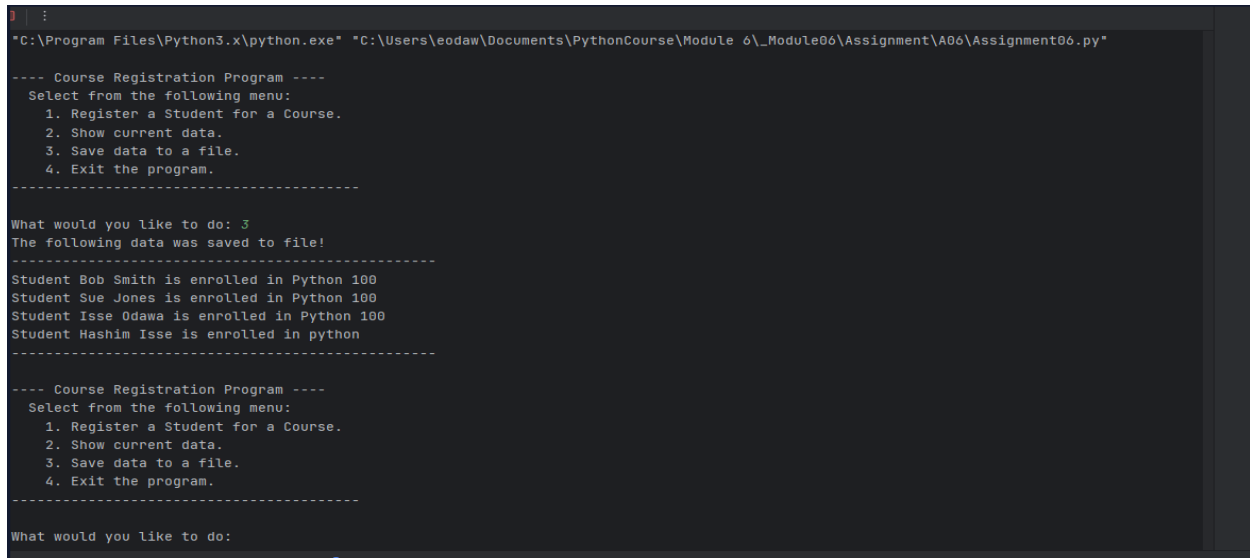
The image shows a screenshot of a code editor window. The title bar at the top indicates the file is named 'Enrollments.json'. The editor displays a JSON array containing four student records, each with 'FirstName', 'LastName', and 'CourseName' fields. The records are: Bob Smith (Python 100), Sue Jones (Python 100), Isse Odawa (Python 100), and Hashim Isse (python). The code is formatted with syntax highlighting, and the editor includes standard menu items (File, Edit, View) and window controls.

```
[{"FirstName": "Bob", "LastName": "Smith", "CourseName": "Python 100"},
{"FirstName": "Sue", "LastName": "Jones", "CourseName": "Python 100"},
{"FirstName": "Isse", "LastName": "Odawa", "CourseName": "Python 100"},
{"FirstName": "Hashim", "LastName": "Isse", "CourseName": "python"}]
```

Figure 1: json file

Generated Script Results

The goal of this project was to write script using PyCharm, Command Prompt, and CSV file. The script consumed string inputs of the user, which are student first name, second name and in return print the student's full name and student course profile such course name, course price and total course price. To convey data to input function, output function and print function, I used f strings, concatenation, and organized function using new line. The script code line becomes cleaner using f strings as shown in the above functions. When the code is run a menu of choices is displayed in the run window, which prompts users to make selection and code will run through if statements. Depending on the choice will provide feedback to the user.



```

"C:\Program Files\Python3.x\python.exe" "C:\Users\edaw\Documents\PythonCourse\Module 6\Module06\Assignment\A06\Assignment06.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.
-----

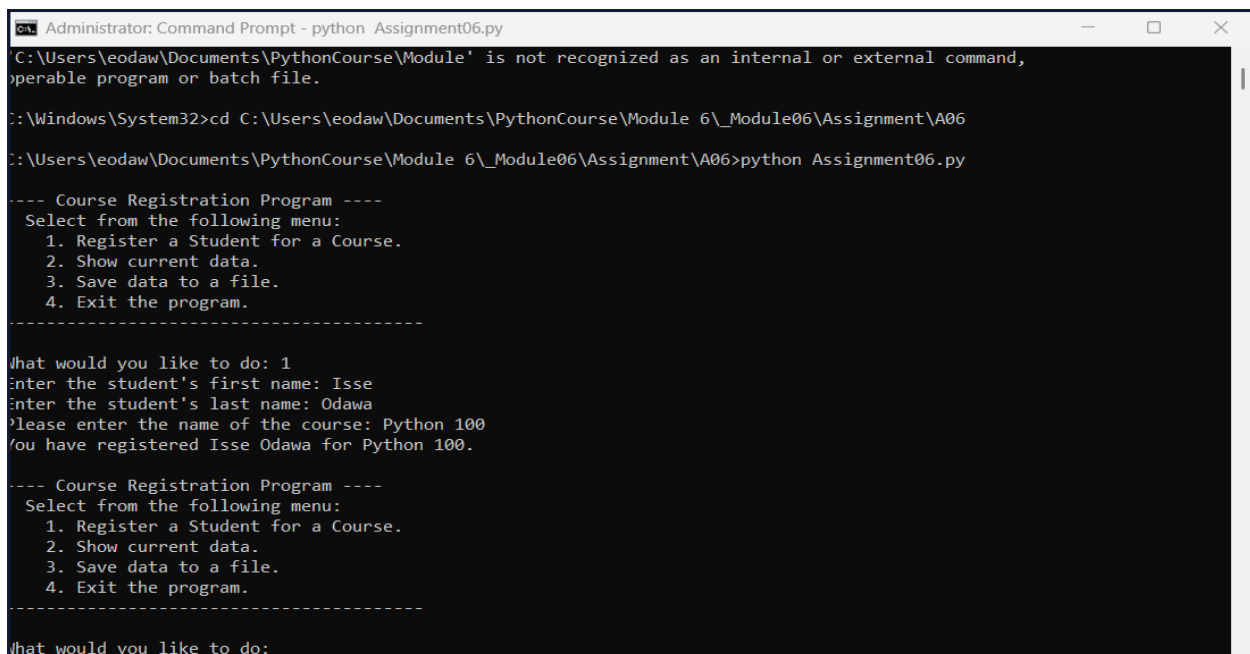
What would you like to do: 3
The following data was saved to file!
-----
Student Bob Smith is enrolled in Python 100
Student Sue Jones is enrolled in Python 100
Student Isse Odawa is enrolled in Python 100
Student Hashim Isse is enrolled in python
-----

---- 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.
-----

What would you like to do:

```

Figure 2: Run Module



```

Administrator: Command Prompt - python Assignment06.py
'C:\Users\edaw\Documents\PythonCourse\Module' is not recognized as an internal or external command,
operable program or batch file.

C:\Windows\System32>cd C:\Users\edaw\Documents\PythonCourse\Module 6\Module06\Assignment\A06

C:\Users\edaw\Documents\PythonCourse\Module 6\Module06\Assignment\A06>python Assignment06.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.
-----

What would you like to do: 1
Enter the student's first name: Isse
Enter the student's last name: Odawa
Please enter the name of the course: Python 100
You have registered Isse Odawa for 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.
-----

What would you like to do:

```

Figure 3:CMD test results calling the assignment script and corresponding inputs and outputs.

Summary

In Assignment, I learned using while and IF statement. I created a menu. the format of creating script code environment, sequence of code writing: data declaration, sequence classes, functions and class classes to take user through menu options for inputs, output and student data storage. In this assignment, I used PyCharm tool to write scripts and test the in the same environment. I learned testing code both Python environment and windows built in command (CMD). In this assignment I wrote successful Python script code in which data inputs is used in input function, output function and generated data to a csv file, which data could be appended continuously. In this assignment I learned new python scripts such as use of classes, functions, while, if statement, to presents data and store data to json file,