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Foundations of Programming: Python
Assignment05

Module05 Completing the Assignment

Introduction

In Module05, dictionaries are introduced as a new collection type. By having dictionaries, we can organize and assign our data better. JSON files are also introduced in the lecture, which is a Java Script Object Notation storage type. In addition, Github is now being used to store the codes we have written.

Data Variables

First import file is stated at the top of the file. Note that the enrollment file is a json file, changing from the csv file we used for the past assignment. Then the data constants are stated. The data variables stayed the same as past assignments, however the student's individual data is stored as dictionaries in this assignment.

```python
import json

MENU: str = '''
---- 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.
----------------------------------------
'''
# Define the Data Constants

FILE_NAME: str = "Enrollments.json"

# Define the Data Variables and constants
student_first_name: str = ''  # Holds the first name of a student entered by the user.
student_last_name: str = ''  # Holds the last name of a student entered by the user.
course_name: str = ''  # Holds the name of a course entered by the user.
file = None  # Holds a reference to an opened file.
menu_choice: str = ''  # Hold the choice made by the user.
student_data: dict[str] = {}  # one row of student data
students: list[dict[str]] = []  # a table of student data
```

Figure1: Variables

Data

I first open the file in read mode, assuming that there is a prior file. Try statement is used because my assumption might not be right. When there are no existing files, Exception is usd to overcome the "no prior file existed" error. There is also a .JSONDecodeError when I was trying to run my code, I then reset the file to using outside resources provided in the module folder. I used Exception again to fix any error from loading the file. To close the try statements, I wrote file.close().

```python
34    try:
35        file = open(FILE_NAME, "r")
36        students = json.load(file)
37        print("data loaded from the file")
38    except FileNotFoundError as e:
39        print("file not found, creating new file")
40        file = open(FILE_NAME, "w")
41        json.dump(students, file)
42    except json.JSONDecodeError as e:
43        print('wrong formatted file, please try again')
44        print(e, e.__doc__, type(e), sep='\n')
45    except Exception as e:
46        print('no data in file, please try again')
47    finally:
48        if not file.closed:
49            file.close()
50
```

Figure 2: Data

Options

Menu options are presented using true statement, and loops and commands are used for each option. For option 1, student's first name, last name, and course name need to be stored from the inputs. The first names and last names must be alphabetical, so an if not statement is written to detect any input that's not alphabetical. Then the program can proceed once the correct information is inputted, and the data is appended.

```
59      # Input user data
60      if menu_choice == "1":  # This will not work if it is an integer!
61          try:
62              student_first_name = input("Enter the student's first name: ")
63              if not student_first_name.isalpha():
64                  raise ValueError("Error- First name can only be alphabetic")
65              student_last_name = input("Enter the student's last name: ")
66              if not student_last_name.isalpha():
67                  raise ValueError("Error- Last name can only be alphabetic")
68              course_name = input("Please enter the name of the course: ")
69          except ValueError as e:
70              print(e)
71
72          student_data = {"student_first_name": student_first_name, "student_last_name": student_last_name,
73                          "course": course_name}
74          students.append(student_data)
75          print(f"You have registered {student_first_name} {student_last_name} for {course_name}.")
76          continue
77
```

Figure3: Writing Option 1

For option 2, I didn't change anything from the last assignment. For option 3, it needs to save the inputted information onto the JSON file. I know for this option, except commands need to be used if there are errors. I first wrote .JSOn with w" mode the, if the file is not found, I wrote an exception for any errors. I then close the file with finally. In this option, I had some trouble with debugging. It seems like my student_data is not properly stated, but I don't know exactly how to fix it. In addition, it seems like there are end statements expected for some lines, but I also don't know how to fix it. Lastly, one of the lines is "unreachable", which I don't really understand.

```
87       # Save the data to a file
88       elif menu_choice == "3":
89           try:
90               file = open(FILE_NAME, "w")
91               json.dump(students, file)
92               file.close()
93           except Exception as e:
94               print('technical error found')
95               file.close()
96           finally:
97               if not file.closed:
98                   file.close()
99               continue
100          print("The following data was saved to file!")
101          for student in students:
102              print(f"{Student["student_first_name"]}{student["student_first_name"]} "
103                    f"is enrolled in {student["course_name"]}")
104          continue
```

blems   File 11   Project Errors   Server-Side Analysis   Vulnerable Dependencies

🐍 Assignment05.py ~/PycharmProjects/pythonProject/pythonProject 11 problems
  🔴 Unresolved reference 'student_data' :62
  🔴 Unresolved reference 'student_data' :62
  🔴 Unresolved reference 'student_data' :62
  🔴 End of statement expected :62
  🔴 Statement expected, found Py:RBRACE :62
  🔴 End of statement expected :64
  ⚠ Expected type 'dict[str]', got 'list[str]' instead :60
  ⚠ Redeclared 'student_data' defined above without usage :61
  ⚠ This code is unreachable :100

Figure 4: Writing Option 3

For option 4, I close the program. It remained the same as last assignment.

Results

My code did not run successfully in PyCharm with some debugging issues. I referenced the outside resources provided as well as lectures notes and demo notes, but to no avail.

Summary

In module05 assignment, I encountered some issues while writing my code, where I did not know how to resolve the problems. However, I still learned about JSON file, exception command, as well as the use of dictionaries. In addition, Github is introduced and this document alongside my code will be posted on the Github repository for review.