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IT FDN 110 B

Assignment 04

Demonstrating the use of the lists and files using the PyCharm IDE

Introduction

This week is about demonstrating how to use the lists and files using the PyCharm IDE. Most of the program was same as in the starter file, but I made some changes to add in my flavor and learn what the program is doing. Below the sections of the report breaks down the assignment and covers the details. The program is created in PyCharm 2022.2.1 with Python 3.12.2.

Creating the Program

As you know there are multiple ways to write a program in Python to achieve the same results, I chose to start it by providing a brief description of what the program is about as a comment in the script. After that, I described what the program does and how to use it. In the very beginning, I used quotations to write a brief description of the basic math program and some program details such as what the program is about, who wrote the program and when it was last updated as shown in Figure 1.1. This description helps the developers and programmers in updating the program in future. After that Figure 1.2 shows the print command to greet the user, tell the user about the program and ask the user to input the numbers.

```
# ------------------------------------------------------------------------------------------ #
# Title: Assignment04
# Desc: This assignment demonstrates using lists and files to work with data
# Change Log: Mohammad Ammar Bharmal, 03/10/2024, Created Script
#   RRoot,1/1/2030,Created Script
#   <Your Name Here>,<Date>, <Activity>
# ------------------------------------------------------------------------------------------ #
```

Figure 1.1: Triple-quoted the program title, brief description and the change log

```
print("""
      Welcome to Assignment 04: Course Registration Program!
         This program demonstrates the use of lists and
             files using the PyCharm IDE in Python
      """
      )
```

Figure 1.2: Triple-quoted print string including a brief description of the program

Very similar to assignment 3, I defined the menu as shown in figure 1.3, and then defined the data variables as shown in figure 1.4. I did a brief commenting in my program, as guided by Julian, so that anyone who will be updating the program in future would know what the program is doing.

```
# Define the Data Constants
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.
----------------------------------------
"""
```

Figure 1.3: Defining menu

```
# defining data constant with datatype and setting it with the csv file name
FILE_NAME: str
FILE_NAME = "Enrollments.csv"  # assigning value to the constant

# Define the Data Variables
# defining data constant with datatype and setting it as empty string
student_first_name: str = ""
student_last_name: str = ""
course_name: str = ""
csv_data: str = ""
menu_choice: str
```

Figure 1.4: Defining data constants and variables

Presenting and processing the data

In figure 2.1, I present and process the programing through a while loop and menu choices. In choice 1, I asked the user to input the first name and last name. These names are stored in three separate variables: "*student_first_name*", "*student_last_name*" and "*course_name*". The variables capture the user's data with the input function and store them as strings. The information to be printed is first stored in a variable, "*csv_data*", and then displayed using the print command.

I created a comma separated values file (csv), "*Enrollments.csv*" and updated it with the same data which was displayed to the user. The csv file is opened and written using the open and write commands respectively. This is shown choice 3 of the menu in figure 2.1.

```
# Present and Process the data
while True:
    # Present the menu of choices
    print(MENU)
    menu_choice = input("What would you like to do: ")

    # Input user data
    if menu_choice == "1":  # This will not work if it is an integer!
        student_first_name = input("Enter the student's first name: ")
        student_last_name = input("Enter the student's last name: ")
        course_name = input("Please enter the name of the course: ")
        csv_data += f"{student_first_name},{student_last_name},{course_name}\n"
        continue

    # Present the current data
    elif menu_choice == "2":
        print("\nThe current data is:")
        print(csv_data)
        continue

    # Save the data to a file
    elif menu_choice == "3":
        file_obj = open(FILE_NAME, "w")
        file_obj.write("First name,Last name,Course Name\n")
        file_obj.write(csv_data)
        file_obj.close()
        print(
            f"You have registered {student_first_name} {student_last_name} for {course_name}."
        )
        continue

    # Stop the loop
    elif menu_choice == "4":
        break  # out of the loop

    else:
        print("Please only choose option 1, 2, or 3")

print("Program Ended")
```

Figure 2.1: While Loop with menu choices and activities

Testing the Program

Figure 3.1 shows the greeting for the user and the display of the menu, followed by asking the user for the menu choice. On choosing option 1, the user inputs the student data as shown in figure 3.2. Figure 3.3 presents the confirmation of saving the data when the user chooses menu option 3.

```
    Welcome to Assignment 04: Course Registration Program!
       This program demonstrates the use of lists and
           files using the PyCharm IDE 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: 1
```

Figure 3.1: Presenting menu to the user and asking to input the desired option

```
What would you like to do: 1
Enter the student's first name: Mohammad
Enter the student's last name: Bharmal
Please enter the name of the course: Python
```

Figure 3.2: User inputs are processed and displayed by the application

```
What would you like to do: 3
You have registered Mohammad Bharmal for Python.
```

Figure 3.3: User inputs are saved by the application into the csv file

The application validation is important so understand the credibility of the application. If three students are registered into the application and are saved using the menu choice 3, the *cvs* file should store that information. The application is run and validated from the *Enrollments.cvs* file. Figure 3.4.a shows the *cvs* file in PyCharm and figure 3.4.b shows the *cvs* file in excel as the final validation of the application. The first row is for the heading.

```
1   First name,Last name,Course Name
2   Mohammad,Bharmal,Python
3   Josh,Ranson,Math
4   Adriana,Manson,Physics
```

Figure 3.4.a: Validation of the application through the output of the cvs file in PyCharm

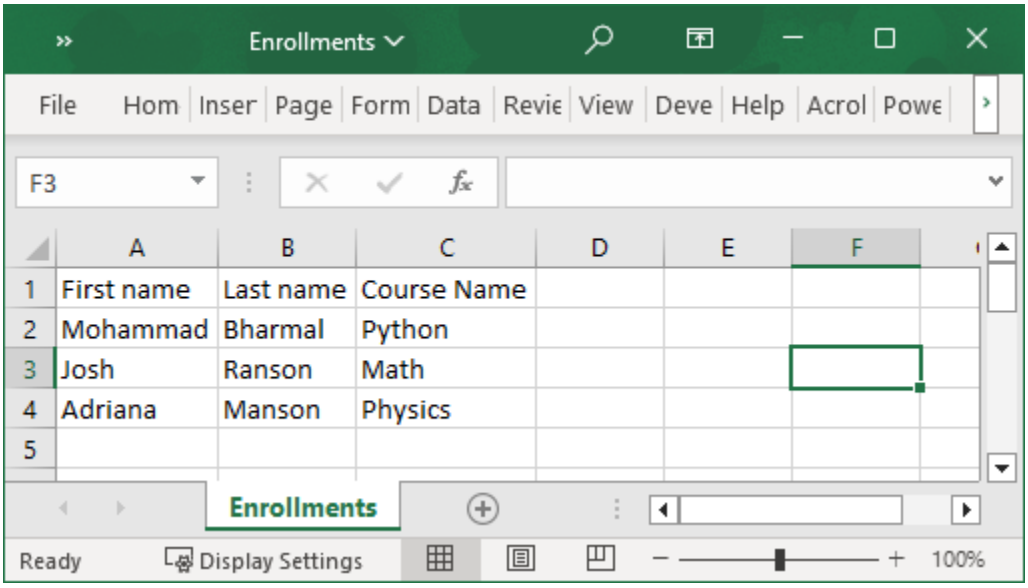

Figure 3.4.b: Verifying if the data is updated in the csv file in Excel

Summary

The assignment 4 demonstrates the use of use lists and files using the PyCharm IDE. Using a menu, while loop and data input, the comma separated values file is opened and written using the open and write commands respectively. Moreover, the opening of the program and commenting to code helps improve the longevity of the program. It makes the program look more professional, well documented, and easy to debug/reuse in future.