**Sandra D Harvie**

December 15th 2020

Foundations of Programming: Python

**MODULE 09: OOP Programming & Modules**

**ASSIGNMENT 09: Modules**

1. **Introduction**

This paper documents my learning from Module 9, the goal of which was to learn about creating scripts using Modules, and how they're used to organize functions and classes.

I have demonstrated my learning by

* Answering the questions provided in the Assignment
* Creating a script to achieve the task detailed in Section 4.
* Running the script within both PyCharm and a command shell
* Posting my files on GitHub

<https://github.com/seattlethistle/IntroToProg-Python-Mod09>

1. **Background**

I watched the video "Mod09 Course Video" and followed along with the class notes "\_Mod9Python ProgrammingNotes.pdf". I also watched the Session 9 Q&A recording.

I read the ninth chapter of "Python Programming, 3rd Edition" entitled "Object-Oriented Programming: The Blackjack Game".

I also completed some of the tutorials from the external websites that were provided.

1. **Questions**

• What is the difference between a class and module?

A module is a file that can be used repeatedly, written either by yourself or someone else. A class is a collection of methods within a code, sometimes within a module.

• What is the "main" module?

The script that you interact with directly is the "main" module. That is what we've been doing up till now. Creating main modules. A python application/program is often made up of multiple files. A good way to build things. You would have a main module plus any other module you create. Kinda like using the print command which uses code within Python that we didn't write.

• What is the "\_\_name\_\_ " System Variable?

System variable built into python that returns the name of the file that you're in, unless it’s the interactive module in which case it returns the word main.

• How do you connect one module to another?

By using the import command.

• What is class inheritance?

You can inherit code from one class to another. This is another way to use code many times saving lot of time. It sets up a parent child relationship.

• What are three types of UML diagrams?

There are many types of UML diagrams that are discussed in great detail online. However, the three that were discussed in detail in this class are -

1. Class Diagram
2. Composition Diagram
3. Use Case Diagram

**Assignment**

The goal of Assignment 09 is to create a main script that will call the Modules provided in the Mod09Listings folder (DataClasses.py IOClasses.py and ProcessingClasses.py), and use the functions within them to make the menu that collects employee data work. Pseudo code was provided.

* Create a sub folder called Assignment09
* Create a new project in PyCharm within the Assignment09 folder
* Copy in the 5 starter files provided in the Mod09Listings folder
* Create a new file "Main.py" containing the pseudo script from Listing13
* Add code to the script to perform the task described above
* Run the script in BOTH PyCharm and an OS command/shell
* Document the knowledge gained

1. **Discussion**

**Figure 1** displays my code in the file "*Main.py*" in the PyCharm IDE.

I started this assignment by creating a folder called Assingment09 and copying in the relevant files from the Mod09Listings download folder. These included: DataClasses.py IOClasses.py ProcessingClasses.py EmployeeData.txt and TestHarness.py. (I conceded upfront that I did not utilize the TestHarness.py file while testing my code.) I created a new file Main.py and copied in the pseudo code from Listing13.

My first step was to copy the code from Listing12 that imports the 3 modules, along with the test code from Listing12. I was able to play with that to confirm that my main file was reading the modules correctly.

Since this assignment is again based on the menu system I copied over my "while" working code from Assignment06. I then modified it to include the 4 options in the menu given. I made some rudimentary efforts to improve the appearance and add polite messages to the user.

The main problem I ran into was that I inadvertently left code that I'd copied from Assignment06 active (it's now # out on lines 50-53) where I only meant to keep the code reading the listTable. It took me a long time to work out why when I read the text file back in it only ever had 2 lines.

**Figure 2** displays the code after being ran in the PyCharm run window.

**Figure 3** displays the code being ran at the command prompt in the Assignment09 folder. It runs here exactly as intended.

**Figure 4** displays the text file "*EmployeeData.txt*".

1. **Image Captures**

Machine generated alternative text:
Lue kdit view Navigate code ßefactor Rn bols VC Window help AssignmentO9 - Main.py — D X
AssignmentO9)  Main.py • main  Ó C • Q
j Main.py í AnswerMain.py  DataClasses.py X j. TestHarness.py j lOClasses.py  EmployeeData.bct j. Proces ‘
1 [:]# . All A .1
2 # TitLe: Assignment 89
3 # Description: Working with Modu’Les
4
5 # ChangeLog (Who,When,What):
6 # RRoot,1.i.2030,Created started script
7 # RRoot,1.1.2038,Added pseudo-code to start assignment 9
8 # SDH,12.14.2020,Modified code to complete assignment 9
9 -
10 IlstTable = [] # A list that acts as a ‘table’ of rows
12 ‘# TODO: Import Modules
13 #SDH COPY THE IMPORT/TEST CODE FROM Listingl2
if __name__ == “__main__”:
15 from DataClasses import Employee as Emp
16 from ProcessingCl.asses import FileProcessor as Fp
17 from IOdasses import EmployeelO as Eio
18 el.se:
raise Exception(”This file was not created to be imported”)
21 #SDH THE FOLLOWING TEST CODE SHOULD PROBABLY BE IN THE TEST HARNESS. ..?
22 #SDH THEN DOLLAR OUT OUT THE TEST CODE BUT USE BITS OF IT LATER
23 # Test data module
24 # objPl = Emp(1, “Bob”, “Smith”)
25 # objP2 = Emp(2, “Sue”, “Jones”)
26 # LstTabLe = (objPl, objP2J
27 # for row in lstTabte:
28 print(row.to_stringQ, type(row))
29 # Test processing module
30 # Fp.save_data_to_file(”EmployeeData.txt”, l.stTable)
31 # l.stFiLeData = Fp.read_data_from_file(”EmplojeeData.txt”)
32 # tstTable.clear()
33 # for Une in lstFileData:
34 tstTable.append(Empítine(03, Une(i1, line(21.stripQ))
35 # for row in LstTabte:
36 print(row.to_stringQ, type(row))
37 # Test 10 cLasses
.:38 # Eio.print_menu_items()
39 # Eio.print_current_Ust_itemsÇtstTable)
40 # print(Eio.input_emptojee_dataQ)
41 # print(Eio.input_menu_optionsO)
4: Run E TODO 0 6: Problems • 5: Debug  Terminal • Python Console Q Event Log
10:1 CRLF UTF-8 4 spaces Python 3.9 ‘

Machine generated alternative text:
Lue kdit view Navigate code ßefactor Rn bols VC Window help AssignmentO9 - Main.py — D X
AssignmentO9)  Main.py • main  Ó C • Q
j Main.py í AnswerMain.py  DataClasses.py X j, TestHarness.py j lOClasses.py  EmployeeData.bct j, Proces ‘
43 # Main Body of Script - - ----- ---- -- Al A .1
44 # TODO: Add Data Code to the Main body
45 # Load data from file into a ‘List of employee objects when script starts
46 # objPl = Emp(1, “Bob”, “Smith”)
47 # objP2 = Emp(2, “Sue”, “Jones”)
48 # tstTabLe = (objPl, objP2j
49 y# Fp.save_data_to_fi’Le(”EmployeeData.txt”, lstTable)
50 lstFfleData = Fp.read_data_froni_file(”EmployeeData.txtM)
51 l.stTable.clear()
52 for line in lstFileData:
53 lstTable.append(Emp(line[0], 1.ine[1], line[2].stripQ))
54 #SDH NO NEED TO PRINT THIS HERE
55 # for row in tstTabLe:
56 print(row.to_stringQ, type(row))
57
58 # Show user a menu of options
59 #Eio.print_menu_items()
60
61 #SDH COPY THE MENU CODE BELOW FROM ASSIGNMENT06 AND MODIFY THE NAMES
62
63 # Get user’s menu option choice
64 while (True):
o5 Eio.print_,nenu_itenis() # Shows menu
oo strChoice = Eio.input_menu_options() # Get menu option
67
68 # Show user current data in the ‘List of employee objects
69 if strChoice == ‘1’: # Show current data
70 Eio . print_current_list_itenis(lstTable)
71 continue # to show the menu
72
73 # Let user add data to the ‘List of employee objects
74 r elif strChoice == 2’: # Add a new Task
75 1.stTable.appencl(Eio.input_empl.oyee_dataO)
76 continue # to show the menu
Ñt 77
while (True) elif strChoice == 3’
4: Run E TODO O 6: Problems • 5: Debug  Terminal 4’ Python Console Q Event Log
82:2 CRLF UTF-8 4 spaces Python 3.9 

Machine generated alternative text:
Lue kdit view Navigate code ßefactor Rn bols VC Window help AssignmentO9 - Main.py — D X
AssignmentO9)  Main.py • main  Ó C • Q
j Main.py í AnswerMain.py  DataClasses.py X jj TestHarness.py j lOClasses.py  EmployeeData.bct j. Proces ‘
A11’-
.- 78 # Let user save current data to file
79 elif strChoice == ‘3’: # Save Data to File
80 #Fp.save_data_to_fite(”EmptoyeeData.txt”, lstTable)
strChoice = Fp.input_yes_no_choice(”Save this data to file? (y/n) - “)
if strChoice.lower() == “y”:
Fp . save_data_to_f ile(M EmployeeData .txt”, lstTable)
Fp . input_press_to_continue(strChoice)
86 else:
87 Fp.input_press_to_continue(”Save Cancelled! “)
88
89 continue # to show the menu
91 # Let user exit program
92 elif strChoice == ‘4’: # Exit Program
93 print(”Goodbye!”)
.: 94 break # and Exit
95 .
96  Main Body of Script ----
4: Run E TODO 0 6: Problems b 5: Debug  Terminal • thon Console Q Event Log
LIJ PEP 8: W292 no newline at end of file. PEP & W292 no newline at end of file. PEP 8: W292 no newline. 96:1 CRLF UTF-8 4 spaces Python 3.9 

**Figure 1: Script file in PyCharm**

Machine generated alternative text:
C:\users\dq46€e\Python39\python.exe C:/Users/dq4ó€e/...PythonClass/Assignmentø9/Main.py
Menu of Options
1) Show current employee data
2) Add new employee data.
3) Save employee data to File
4) Exit program
Which option would you like to perform? [1 to 4] — 1
******* The current items employees are: *******I
1, Bob, Smith
2, Sue, Jones
Menu of Options
1) Show current employee data
2) Add new employee data.
3) Save employee data to File
4) Exit program
Which option would you like to perform? [i to 4] - 2
What is the employee Id? - 3
What is the employee First Name? — Sandra
What is the employee Last Name? — Harvie
Menu of Options
1) Show current employee data
2) Add new employee data.
3) Save employee data to File
4) Exit program
Which option would you like to perform? [1 to 4] - 1

Machine generated alternative text:
******* The current items employees are: *******
1, Bob, Smith
2, Sue, Jones
3, Sandra, Harvie
Menu of Options
1) Show current employee data
2) Add new employee data.
3) Save employee data to File
4) Exit program
Which option would you like to perform? [1 to 4] — 3
Save this data to file? (yIn) — y
Press the [Enter] key to continue.
Menu of Options
1) Show current employee data
2) Add new employee data.
3) Save employee data to File
4) Exit program
Which option would you like to perform? [i to 4] - 4
Goodbye!
Process finished with exit code S

Machine generated alternative text:
C:\users\dq4óøe\Python39\python.exe C:/Users/dq4ó€e/..PythonClass/Assignment€9/Main.py
Menu of Options
1) Show current employee data
2) Add new employee data.
3) Save employee data to File
4) Exit program
Which option would you like to perform? [1 to 4] — 1
******* The current items employees are: *******
1, Bob, Smith
2, Sue, Jones
3, Sandra, Harvie
*******************************************
Menu of Options
1) Show current employee data
2) Add new employee data.
3) Save employee data to File
4) Exit program
Which option would you like to perform? [1 to 4] -

**Figure 2: Script run window in PyCharm**

Machine generated alternative text:
[Command Prompt- python Main.py
— D X

**Figure 3: Script running from a Command Shell**

Machine generated alternative text:
Users\dq40e\..PythonClass\AssignmentO9\EmployeeData.bct - Notepad... — 0 X
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
X
»
EmpIoyeeData.txt 
1,Bob,Smith
2 2,Sue,Jones
3,Sandra,Harvie
4 4,Sarah,Wilson
length Ln: 5 CoI: 1 Sel : 01 0 Dos\Windows ANSI INS

**Figure45: Output Text File**

1. **Conclusion**

In completing Module 9 I have learned how to create scripts that use Modules as a way to organize functions and classes.