Foundations of Programming (Python)

by Dirk Biesinger

Assignment 05

Overview

This activity introduces you `List` and `Dictionaries`. We'll also cover **basics** about **Separation of Concerns programming pattern, error handling, functions, script templates and GitHub**.

You also learn how to create scripts and document your knowledge.

You will perform the following tasks:

1. Watch the module videos.
2. Read a book chapter.
3. Review some web pages.
4. Watch additional videos.
5. Apply your knowledge.
6. Document your knowledge.
7. Post your files to GitHub.
8. Submit your work.
9. Perform a Peer Review (Not Graded)

We are trying to answer the following questions:

- What is the difference between a Dictionary and a List?
- What is the difference between an index and a key?
- How do you read data from a file into a list?
- How do you read data from a file into a dictionary?
- Why is it making sense to organize data in a 2-dimensional way?
- What is the programming pattern "Separation of Concerns"?
- How would you use a function to organize your code?
- Why is a script template useful?
- Why is error handling (try-except) useful?
- What is GitHub and why is it used?
- What is GitHub's mascot?

Assignment Steps

The following assignment steps ask you to read about, perform, and write about programming.

Note: *Course assignments help you learn through* ***reading, watching*** *demonstrations,* ***performing*** *programming in Python, and* ***reflecting*** *on what you learned through* ***writing****. You are strongly encouraged to continue your learning by* ***experimentation****.*

Step 1 - Watch the module videos:

Links are collected here: https://saravji.github.io/saravjis_hut/FDN_Prog/Modules.html (external site)

Work thru the Module #05 part only!

Step 2 - Read a book chapter

Please **read chapter five** in your textbook. You **do not have to perform the exercises or type in the code**, but it is best if you open the script files as you read about them. You can find the book files as download on Canvas for your convenience.

Step 3 - Review the following web pages

Please review the following web pages:

1. https://realpython.com/python-lists-tuples/ (external site): part re lists only
2. https://realpython.com/python-dicts/ (external site)
3. https://www.geeksforgeeks.org/file-handling-python/ (external site)

Step 4 - Additional Videos

There are lots of free videos on the internet, and sometimes it helps to see how other people explain the same topic. So, please watch these:

1. Reading from a text file: https://youtu.be/m0o0CkYsDzI (external site)

Step 5 - Apply your knowledge

After reviewing the videos, book and websites, it is time to **modify** and extend last weeks' program:

Modify the 2D data structure to use dictionaries as the inner data type (list of dictionaries).

I have provided you with an example solution of last week's Assignment as starter script. I want you to use this script. You will note that it is both easier and harder to work with someone else's code, and this is part of the experience on this assignment.

Important: Don't use functions in this assignment. We will be exploring functions in the next Module and use these in the next Assignment. It is important for you to experience the difference. And since we can't use functions, the SoC into data, processing and presentation will not be perfect!

Step 5.1 Create a new Folder

Inside the course folder create another folder called Assignment05 and save your script file into this subfolder as CDInventory.py.

Step 5.2 Modify code

Modify the script as required to replace the inner data structure by dictionaries.

Add the functionality of loading existing data.

Add functionality of deleting an entry.

Your finished script must use a list of dictionaries as 2D table.

Hint: it might seem “simple” and “pretty straight forward”. Don’t be fooled! Changing functionality and / or adding additional functionality might influence existing parts!

Step 5.3 Run Your Script

With the script created and saved in the proper location, run the script in spyder, and then capture an image of it working on your computer. Repeat in a terminal window and capture an image of it working.

Step 5.4 Verify correct functioning

Test all options in your script in both start options and verify the data being written to file correctly.

Step 6 - Document your knowledge

After you have created and tested your Python script, create a document describing the steps you took in performing this assignment.

Note: Make sure you put it in the proper, professional level, formatting! It does not have to be perfect, but if you turn in a simple blob of text, you won't get credit for it! Here is a link that may help you understand what I am looking for: https://youtu.be/rRRVHNN0K7E - Creating Professional Documents (External Site)

Step 7 - Submit your work

In this Module, you need to post your files on a public GitHub repository so that others can review it. Make sure to post your python script and Knowledge Document:

- Login to github.com
- Create a repository “Assignment_05” (don’t forget to check the “create README.md”
- Upload files: Knowledge Document and python script
- Commit changes
- Share a link (simply go on GitHub into your repository and copy the web address) to your GitHub repository on the canvas discussion board “*Assignment 05 Documents for Review!*”. Please use only this board!
- Add this link to your knowledge document.
- Now place your document with the Python script in the Assignment05 folder, then Zip this folder into a “.zip” file, upload the file to the assignment page on Canvas.

Step 8 – Perform a Peer Review (Not graded)

After you have posted your link to GitHub on the “Assignment 05 Documents for Review!” discussion board, select another student’s post and review:

- Follow the link to GitHub
- Review the files on GitHub. This is an informal review. Neither student’s grade will be affected by this.
- Please remember the rules of engagement we have laid out at the beginning of the course and that are available on canvas!
- Try to pick someone who hasn’t received any reviews yet (even if it might mean to wait a couple days for one to appear), so that everybody is on both ends of the review: giving and receiving. You’re welcome to review more than one submission.

- Post your comments as a reply to their original post. This way the review shows up as answer, nested under the original post.
- Make sure to comment on two things you liked about their work
- Make sure to comment on one thing that could improve their work.

Congratulations! You're done!