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IT FDN 110A (WIN2025)

Assignment 05

Module 05 Dictionaries, Error Handling, JSON and GitHub

Introduction

In Module 05, we are introduced to Dictionary collections and see that dictionaries will be extremely helpful for data management. We also learned about error handling which is important to keep your programs operating when there are various errors. Students learned about GitHub in this module. GitHub is a website which is used to store and share code with others. It is a web site that caters to the coding community. Module 05 showed us a new file type that is regularly used to store data in programing called JSON (jay-son)

Dictionaries

Like lists and tuples, dictionaries are used to store data for use in the script. Together these are called data collections. Dictionaries use a different format but share similarities with lists and tuples. Dictionaries use pairs of data called Keys and Values and referred to as "key value pairs". The key and value are separated by a colon (:). Where lists use brackets [ ] to identify themselves in Python, dictionaries use curly brackets { }.

Dictionaries are mutable, meaning that their data can be changed. It should be noted that keys are case sensitive, as they are unique. This means that you cannot have two keys with the same name. Also, key names need to be in quotations, an example of a dictionary is presented here:

classic_cars: dict = {"Make" : "Ford", "Model" : "Mustang", "Year" : 1969}

In this example, the values for the keys can be strings or integers. For more information on dictionaries see this web page:

https://www.w3schools.com/python/python_dictionaries.asp (external site)

Error Handling

Errors happen in life and in Python. In python errors are called exceptions. How we react to errors in our Python script is called "handling". We handle exceptions or errors in Python so the script with continue to run.

The concept of try and except is generally regarded as the way to react to errors. One can write code that will "try" something and if a specific error occurs, one can write an exception or an explanation of the error. There many errors that Python can return when running code. A list of common errors or exceptions can be found here:

https://www.w3schools.com/python/python_ref_exceptions.asp (external source)

As we just learned about keys in dictionaries, we will look at an error Python will return if there is an issue with a (dictionary) key. See figure 1, an excerpt from the above list.

IndexError	Raised when an index of a sequence does not exist
KeyError	Raised when a key does not exist in a dictionary
KeyboardInterrupt	Raised when the user presses Ctrl+c, Ctrl+z or Delete
LookupError	Raised when errors raised cant be found

(figure 1)

As we stated above, keys must be exact and defined in a dictionary. If they are not, you might get a "KeyError". A programmer can write code to explain to the script user what exactly a "KeyError" is and how one can fix the problem. More on Python try and except can be found here:

https://www.w3schools.com/python/python_try_except.asp (external site)

GitHub

GitHub is described here:

GitHub (/ˈɡɪthʌb/) is a proprietary developer platform that allows developers to create, store, manage, and share their code. It uses Git to provide distributed version control and GitHub itself provides access control, bug tracking, software feature requests, task management, continuous integration, and wikis for every project. Headquartered in California, it has been a subsidiary of Microsoft since 2018.

It is commonly used to host open source software development projects. As of January 2023, GitHub reported having over 100 million developers and more than 420 million repositories, including at least 28 million public repositories. It is the world's largest source code host as of June 2023. Over five billion developer contributions were made to more than 500 million open source projects in 2024.

from wikepedia:
https://en.wikipedia.org/wiki/GitHub#:~:text=GitHub%20(/%CB%88%C9%A1%C9%AAt,subsidiary%20of%20Microsoft%20since%202018. (external site) See this webpage for all citations.

JSON

JSON or JavaScript Object Notation is a file type commonly used amongst many different programing languages. It is used to store data and is favored by programmers for its simplicity and portability. JSON files store their data in plain text so one can view it easily in a text editor. More on JSON can be found here:
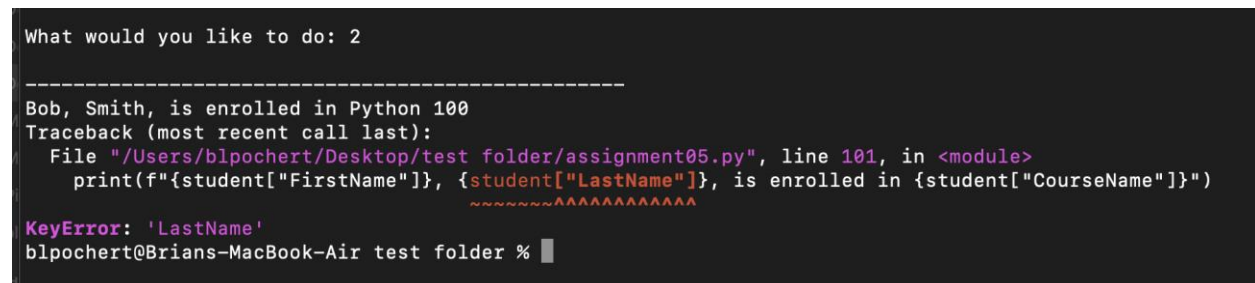
https://www.w3schools.com/js/js_json_intro.asp (external site)

Module 05 Assignment

Module 05 builds on the student registration program we wrote in Module 04. It asks us to add the use of dictionaries where we previously had lists. It also asked us to build in exception (error) handling. In the module 05 assignment, we use a JSON file to store our student data instead of a CSV file. A Starter file was included which included comments on what data was needed for the script.

I found this program used similar code to the code we learned and implemented in the module 05 lab 03 (working with exceptions). I utilized cut and paste to copy the try and except code into my assignment 05 script. This caused several issues with improper indentation. It took me several hours to figure this out and make the corrections. I believe it may have been easier to just rewrite the try and except code from scratch.
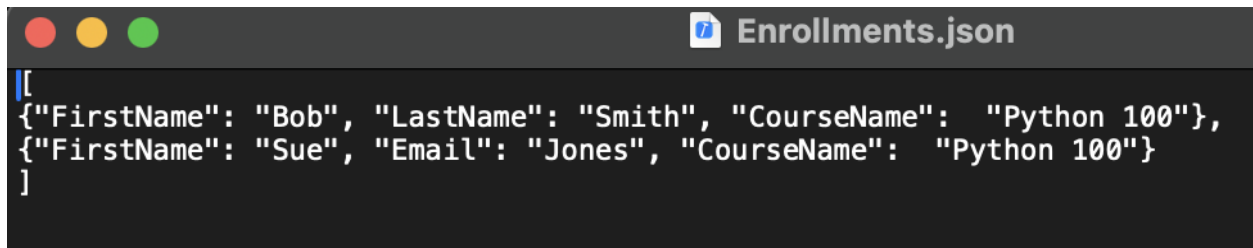
I also had a problem with the assignment's JSON file. The supplied JSON file "Enrollments.json" is used with the program. When I ran the program and tried to display the stored data (option 2) I got this error in figure 2:

(figure 2)

This took me several hours to figure out the problem was with the JSON file and not my code. I eventually figured out that there is a key error in the original file. I opened the JSON file in a text editor and saw this in figure 3:

(figure 3)

I saw that the second entry had the key of "email" when it should have been "LastName". I made the correction in the text editor and the program worked as intended.

The final requirement of the assignment is to upload the script and paper to Github and provide the link. The link to my Github repository is here:

https://github.com/bpoch/Python110-Winter2025 (external site)

Summary

This module was very challenging. I found the concepts straight forward, but programing them difficult. The biggest issue I had was with indentation and keeping the code in its proper line. Once again, the syntax is important and having a misspelling or improper brackets makes a huge difference.