

Brandon Pangan

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IT FDN110 A Spring 24: Foundations of Programming: Python

Assignment 5

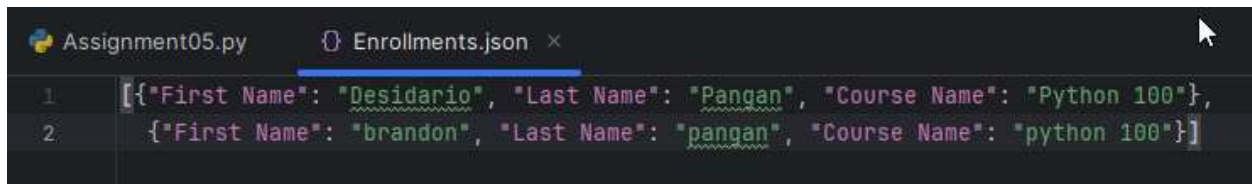
# Advanced Collections and Error Handling

## Introduction

In this week's assignment, we learned of some very important data collection tools. One of the main topics of this module is the use of dictionaries and how to use them with files. Speaking of files, we covered how to use JSON files and the benefits of using them in conjunction with dictionaries. We also covered one of the most useful tools to computer programmers, GitHub. Finally, we covered structured error handling.

## Dictionaries and JSON Files

One of the most useful tools I believe we learned this week was the use of dictionaries and using them in conjunction with JSON files. One of most helpful aspects of using a JSON file with dictionaries is the ability to pair the data with key-values. This makes it much simpler to group objects together and search for them in a data set. I also like how simple it is to write and read from these files. It seems to be much less work to read and write to these files.



```
Assignment05.py  Enrollments.json x
1 [{"First Name": "Desidario", "Last Name": "Pangan", "Course Name": "Python 100"},
2  {"First Name": "brandon", "Last Name": "pangan", "Course Name": "python 100"}]
```

Figure 1: example of JSON file from Assignment.

## GitHub

This week's lesson introduced us to the useful tool GitHub. This repository is used industry wide and is great for keeping track of any kind of changes you or other people make to the code. It is also very useful for sharing code with other people. I have used GitHub before at work and have really enjoyed it. It's nice to see how much more useful it can be with a text-based language. My experience using GitHub has only been with graphical languages such as LabView.

## Error Handling

Another important tool that was covered this week is structured error handling. This topic was important for having the ability to control the response to errors in your code or errors users may have with your code. The main commands we covered here are the use of try and except commands.

## Creating the program

The programming assignment this week was to demonstrate the use of data collection using dictionaries and saving them into JSON files. I started this program by creating an error handler right at the top to read the JSON file. If one was not found, my error handler would create one and flag an error.

```
# When the program starts, read the file data into a list of lists (table)
#Need to import JSON file
import json
# Extract the data from the file
try:
    file = open(FILE_NAME, "r")
    # Load JSON file into list
    students = json.load(file)
    # print(students)
    file.close()
except FileNotFoundError as e:
    print("Enrollments file does not exist\n")
    print("-- Technical Error Message -- ")
    print(e, e.__doc__, type(e), sep='\n')\
    #creates JSON file if no file is found
    file = open(FILE_NAME, "w")
    print('Enrollment file created')
finally:
    file.close()
```

Figure 2: Error Handling JSON File

This program was built off previous knowledge but utilized tools such as dictionaries to make organizing the data easier.

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    print("-- Technical Error Message -- ")
    print(e, e.__doc__, type(e), sep='\n')
```

Figure 3: Reading JSON file

One of the most challenging tasks this week was using structured error handlers. I had some difficulty understanding which error handler to use and where it would be most useful.

## Summary

At the completion of this module, I was able to successfully use JSON files and dictionaries. I also learned how to use structured error handlers using try and except commands. I found that saving to a JSON file is much simpler than a csv file, but I understand that there are applications for both. The assignment demonstrates my understanding of the topics listed above. This assignment really builds off of what we have learned in previous lessons.